November 1957

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NUCLEONICS

ATOMIC POWER • NUCLEAR ENGINEERING • APPLIED RADIATION

First Fruits of U.S. Atoms-for-Peace...

Six Research Reactors Go On Line Abroad page 88

BUYERS' GUIDE ISSUE

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Hamner

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The N-220 Series Decade Scalers are low-cost, fast, and versatile counting devices, employing three in-line decades and a four-digit electromechanical register.

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- **Non-overload preamplifier with 1 mv sensitivity**

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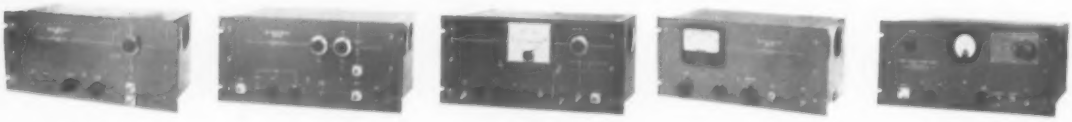

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Amplifier Series
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About NUCLEONICS

Our Peripatetic Editors

As you know by the discussion of our upcoming coverage of the Second Winter meeting of the American Nuclear Society here in New York that appeared on this page last month, we go out and get stories in whatever way we can. That our coverage is not restricted to the single-fare zones of the New York transportation systems is demonstrated by the following rundown of editorial perigrinations during the past and coming few weeks:

- Assistant Editor Jesse Cook went to KAPL to get a story on sodium disposal.
- News Editor John Kenton and Assistant Editor Bob Otterbourg went down to Plainsboro to check progress on the 5-Mw research reactor that AMF is building down there for the 10-company Industrial Reactor Laboratories complex.
- Managing Editor Dan Cooper skipped down to Princeton to try and tap any unclassified information on controlled-thermonuclear-power efforts that might be available during the recent Project Sherwood conference there.
- November 4 and 5, Associate Editor Tom Cramer will be in Chicago to cover the sessions on metallurgy of plutonium fuels that form part of the Second World Metallurgical Congress.
- Assistant Editor Hal Davis is slated to attend the Fast Reactor Symposium to be held by the AEC in Chicago November 20 and 21. He'll stay on to look in on activities at Argonne National Laboratory.
- Editor Jerry Luntz has been down to Washington to visit with AEC officials and to participate in sessions of the American Municipal Association on the impact on communities of the peaceful uses of atomic energy.

Most of these trips will result in articles that will appear in early issues of NUCLEONICS, but for some the yield will not be apparent for many months. In a very real sense, man hours invested in projects today are like money in the bank—they gain in interest; someday we'll pass the dividend on to you.

A Balanced Diet

We try to present a balanced diet in each issue of NUCLEONICS, with at least one article of solid interest to every reader. This month, for example, we hope that reactor designers will be intrigued with the description of advanced reactor designs for nuclear merchant ship propulsion that form a part of our special report starting on page 78. On the other hand, management palates will be more likely to be tickled by the rundown of world-wide efforts toward building a nuclear merchant ship. Similarly, we think the piece by Buyers (p. 100) is appealing primarily to chemists, metallurgists, and the like who are facing the complex problems of fuel reprocessing (but we hope that the astute reactor designer will not miss the implication for fast-reactor systems). Eicholz's article on transistorized detection instruments (p. 90) will put a bug in the ear of many of our instrumentation-minded readers, but we hope will not be passed up by those who are curious about the uses of transistors in the nuclear field.

The story on vulcanizing tires by irradiation (p. 94) is aimed primarily at men who specialize in applications of radiation, but we feel sure that anyone with nuclear blood in his veins will be intrigued by the realization that real honest-to-goodness tires can be made this way.

The picture-caption stories on Hinkley Point, Britain's newest nuclear power station design (p. 98) and the Atoms-for-Peace research reactors going critical around the world (p. 88) are intended for a more relaxed kind of reading—particularly so the latter story. The philosophy is that the reader is many people at once. He has a concentrated interest in articles on his own specialty but is also vitally interested in every phase of the nuclear field. Thus it is when we prepare this magazine for you each month we seek a balanced diet to satisfy the several appetites of the complex citizens of a complex world.

The Buyers' Guide

This issue is the thickest in the history of NUCLEONICS. More than anything else, the thing that makes it so is the Buyers' Guide that is published as part of it. As in past years this represents the result of yeoman efforts on the part of Buyers' Guide Manager Jack Quint and his assistants, Regina Hera and Frances Sullivan. They send out the hundreds of questionnaires and tally the results that finally become the most complete directory of nuclear products available.

Why not turn to the directory now and scan the entries. If you have any suggestions for ways in which it can be improved, Jack Quint will be delighted to hear from you.

—The Editors

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Coming Features in NUCLEONICS

Next Month—Foldout Description of Sodium Graphite Reactor

Nuclear Fuel Costs

Fission-Product Monitor

Later Months

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Boiling-Reactor Instabilities

Reactor Siting

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Wheatstone Bridge—4735

For resistance measurements of high accuracy in laboratory use. Range: 0.01 ohm to 1,111 megohms. Limit of Error; $\pm(0.05\% + 0.001$ ohm) up to 100 megohms; $\pm 0.5\%$ above 100 megohms. Rheostat Switches: Five decades of enclosed switches in steps of $10 \times (1000 + 100 + 10 + 1 + 0.1)$. Multiplier dial: Eleven position enclosed switch, multipliers from 10^{-5} to 10^{+5}. Write for Data Sheet E-53(1A).

Type K-3 Potentiometer—7553

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Used as microvolt meter; micro-microammeter; recorder pre-amplifier; null detector. *9835 Microvolt Unit.* Range: 0 to 50 or −25 to +25 μv; scale multipliers 1, 2, 4, 10, 20, 40. Accuracy: ±0.4% ±0.5 μv. *9836 Micro-Microampere Unit.* Range: 0 to 1000 or −500 to +500 μμa; scale multipliers 1, 2, 5, 10, 50, 100, 200, 500, 1000, 2000. Accuracy: ±0.5 to 0.8% ±20 μμa. Write for Data Sheet ED7(1).

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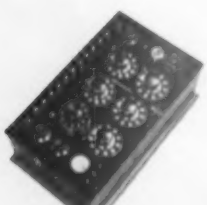
Stabilized Supply for Multiplier Phototubes 101038



Type G-2 Mueller Bridge — 8069

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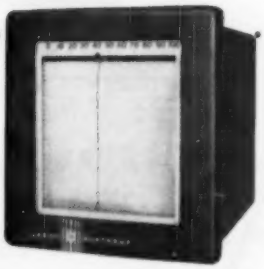

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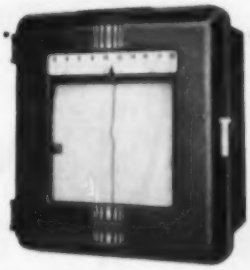

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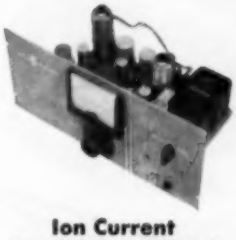

Ion Current Amplifier — 9836-S

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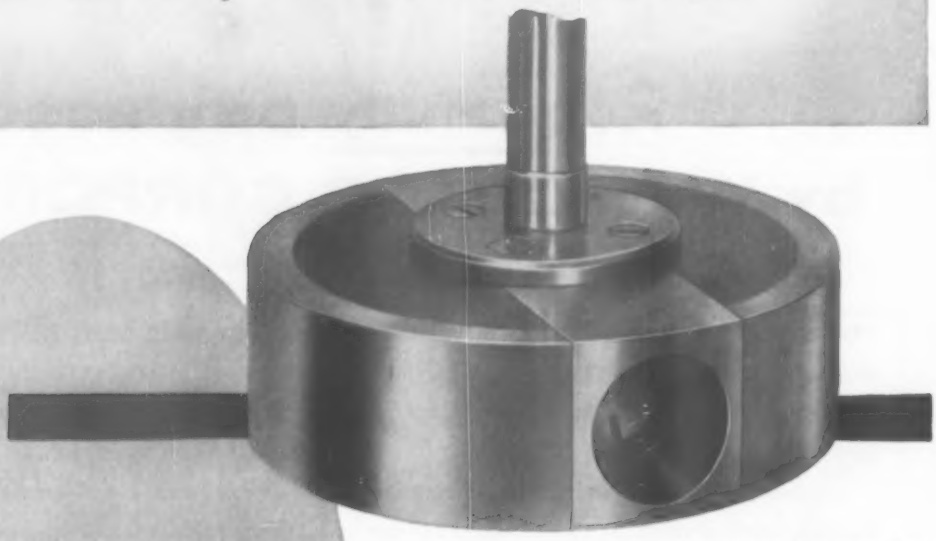

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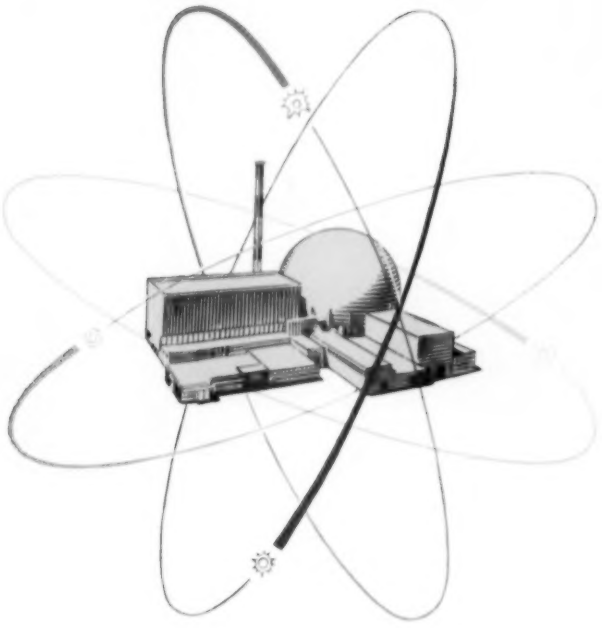

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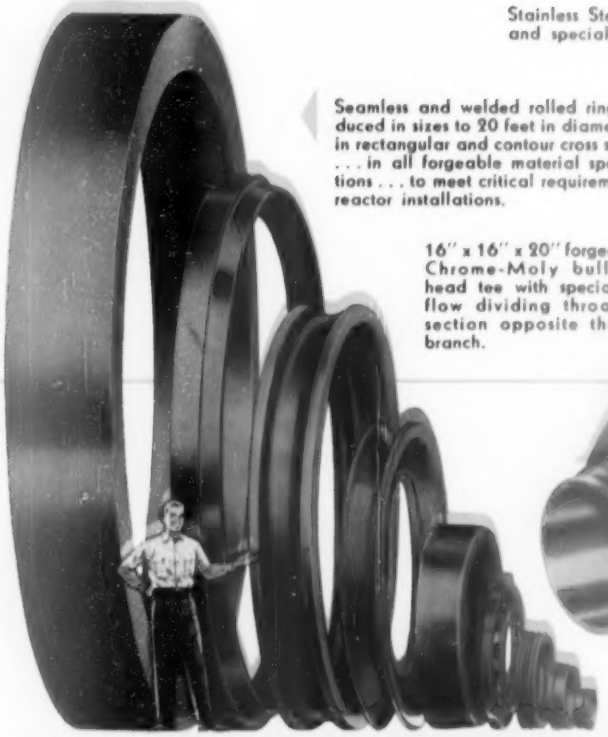

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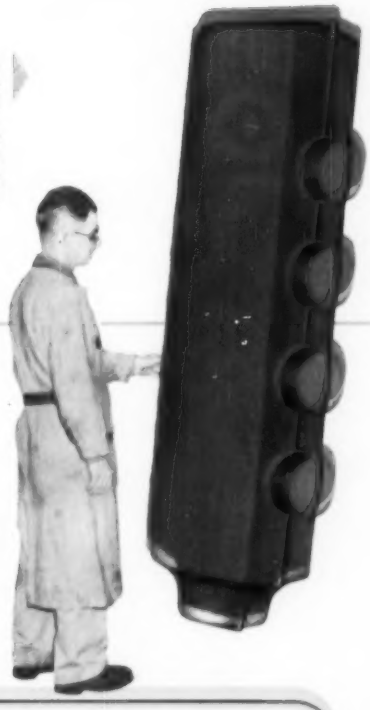

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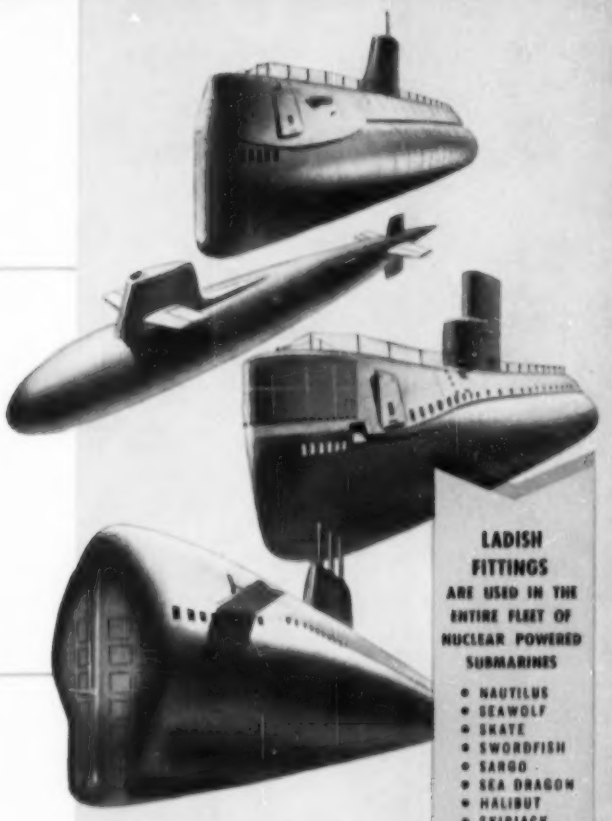

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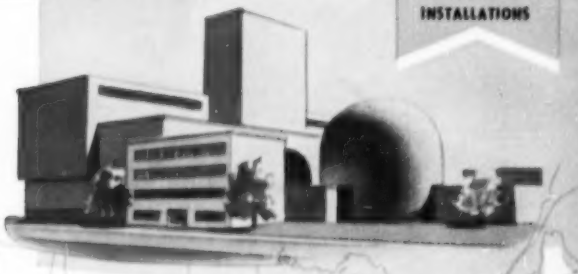

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Up to 20' in diameter

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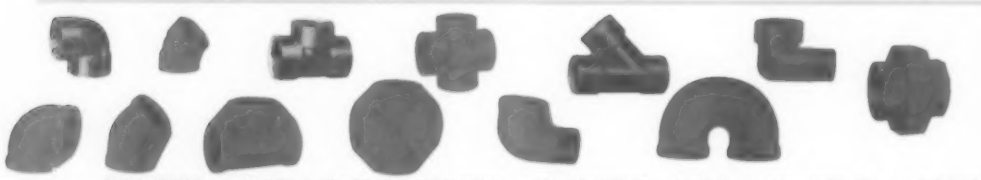

SCREWED and SOCKET TYPE FITTINGS and UNIONS—⅛" thru 4"—150 lb. and 2000

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G NECK FLANGES—
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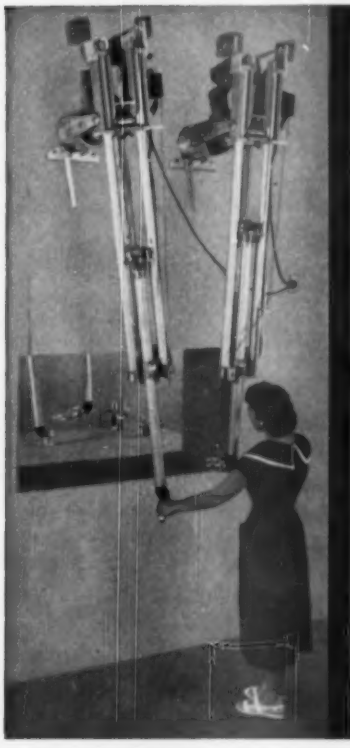
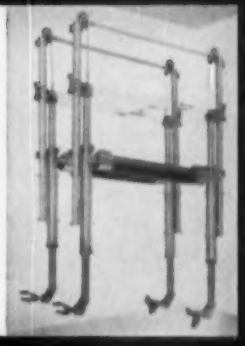
The "sense of feel", the versatility, the uncompromising workmanship . . . all are found in every CRL Manipulator. Research and production organizations all over the world are using these units for handling radioactive materials, explosives, and hazardous chemical and biological materials. Natural motions of the operator's hands are copied exactly at the slave end. The "sense of feel" helps the new operator to become perfectly competent with practically no training period. Handles are adjustable to comfortably fit a wide range of hand sizes.



CRL Model 4

for over-wall installation

A general purpose manipulator for installation over a barrier wall or through a ceiling opening of a protective enclosure.



CRL Model 7

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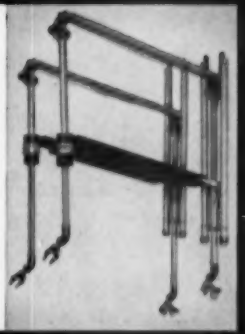
A space conserving, light weight manipulator for use in hoods or over thin walls where minimum clearances and easy portability are important factors.



CRL Model 8

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A general purpose manipulator for installations requiring intermediate to high level shielding, the Model 8 features

- *Accurate "sense of touch"* Low friction forces . . . low backlash . . . low inertia
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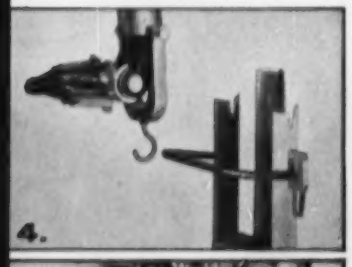
accessories
for master-slave manipulators

4. *Load hook* Available for CRL Model 8; may be remotely attached or removed. Permits a vertical lift of 60 lbs.

5. *Motion locks* Permit objects to be rigidly positioned in space. *Locking grip* standard on all models. Locks for all other motions available as accessories.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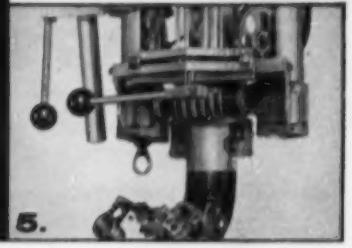
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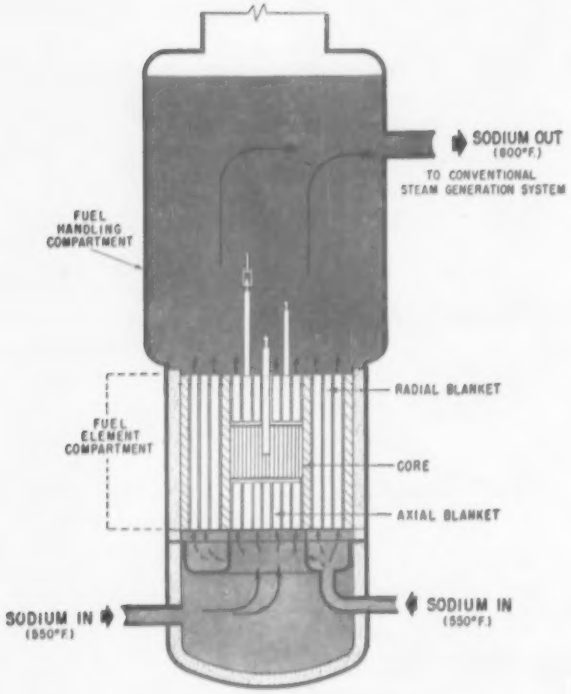
Du Pont Announces new reactor-grade sodium for atomic power systems



SODIUM DESIGN REACTOR

By Courtesy of Atomic Power Development Associates

Now available, new Du Pont reactor-grade sodium contains less than 25 ppm of calcium . . . approximately 1/20th the calcium in commercial-grade sodium.

Developed during a research project on sodium purity, Du Pont reactor-grade sodium is now being used in atomic power systems. These include an atomic submarine and the first land-based atomic power station, which went on stream early this year.

Du Pont high-purity sodium offers a twofold advantage over pressurized water for heat transfer in atomic systems. Besides giving greater transfer efficiency, sodium allows operation at relatively low pressure with higher temperatures. It offers the same attractive advantages for industrial heat-transfer systems.

Du Pont offers technical consultation and assistance to those interested in developing uses for reactor-grade sodium. For additional information, write to the Sodium Products Division, at the address below or contact any of our district offices.

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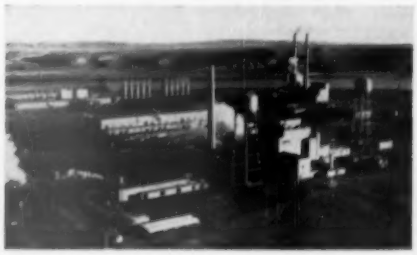
has made KE the experienced leader in nuclear projects



Project: construction of large plutonium production plants. KE work involved reactors, shielding, extensive instrumentation, stainless steel piping, machinery installations and other complex construction. KE completed job ahead of schedule and below the budget.

Cost-saving and time-saving ingenuity, plus a wealth of nuclear experience—these are two of many reasons why Kaiser Engineers has been selected for so many of America's challenging nuclear projects. To date, value of KE nuclear projects amounts to more than $165,000,000.

KE provides complete nuclear engineering and construction services—including concept feasibility, reactor criteria, facility design, construction and test operations.

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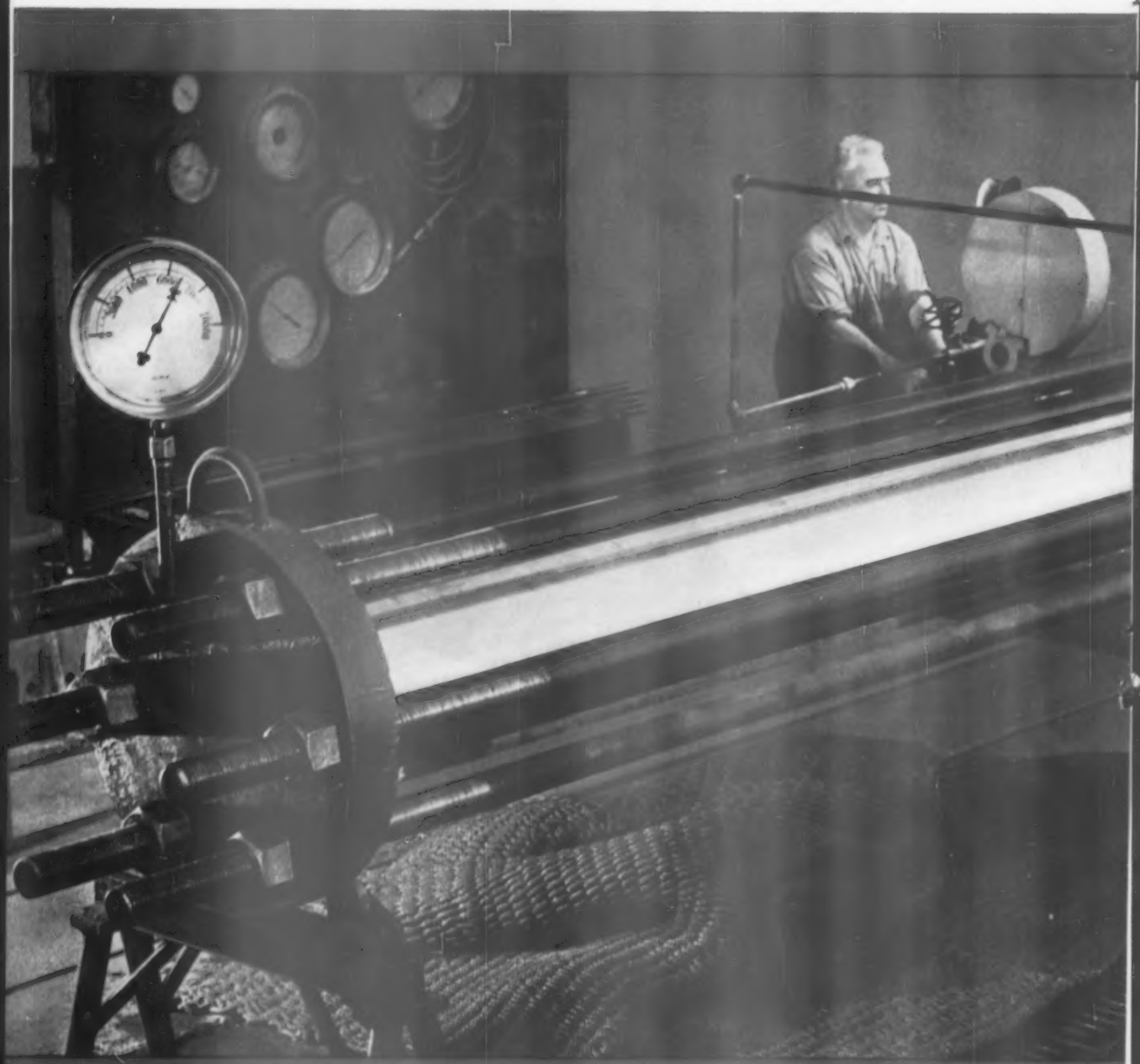
STAINLESS STEEL CENTRIFUGALLY CAST MAY BE



ABOVE: Hydrostatic test rig used to qualify each length of pipe.

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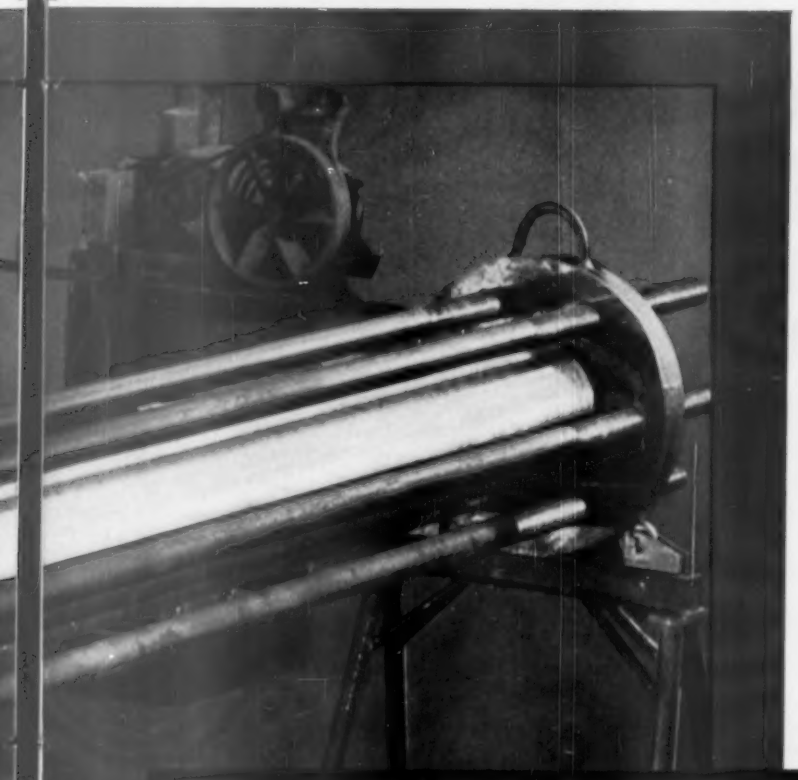
THE ANSWER TO YOUR PIPING PROBLEM



Patented U. S. Pipe process meets rigid refinery specifications

The men who design today's petrochemical plants, refineries or Atomic power plants are confronted with piping problems involving temperatures, pressures and corrosive conditions which only a few years ago would have been called impractical, if not impossible.

U. S. Pipe's Steel & Tubes Division recently completed a piping requirement for 700 feet of Type 316 Extra Low Carbon, columbium-bearing stainless for a large petrochemical plant, which is typical of the job metal mold centrifugally cast pipe is doing today under a patented manufacturing process with rigid Quality Control.

U. S. Pipe is headquarters for metal mold centrifugally cast alloy and stainless steel pressure pipe over a wide range of special and standard analyses —in large or small quantities.

Write and outline your piping problems. We may be able to help.

Note these exacting specifications on 316 Cb ELC Stainless Steel Pipe demanded by one of nation's leading oil companies:

MATERIAL REQUIREMENTS: Pipe shall conform to ASTM Specification A-362-52T.

CHEMICAL ANALYSIS: Modified AISI Type 316 Cb (ELC), with *one percent* spread on chrome and nickel.

FINISH: Each pipe to be turned, bored and faced to surface finish of 125 micro inch or better. O.D. tolerance plus 1/16″ minus 0″; I.D. tolerance plus 0″ minus 1/32″. Pipe size: 12″ O.D. × .17″ wall.

MECHANICAL TESTS: Tensile Tests — 2 tests required on each pipe after heat treatment; one at room temperature, one at 700° F.

INSPECTION REQUIREMENTS

1. Etching test on sections cut from each end of pipe.
2. Radiographic Inspection — Required complete circumferential coverage of at least an 8″ wide section at each end of each pipe in accordance with ASTM Specification E71-52.
3. Fluid Penetrant—Entire O.D. and I.D. surface each piece.

HEAT TREATMENT: Heat for 4 hours at 2100° F.—2150° F., water quench, follow by 5 hours at 1500° F.—1600° F. Cool in still air.

HYDROSTATIC TEST: Each length tested to stress of either 90% of the minimum cold yield strength or a maximum pressure of 6800 psi — whichever is lower.

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STAINLESS STEEL HEADS . . . in Types 304, 304-L, 316 and 316-L are available from stock in ASME and Standard specifications (10" to 72" diameter). A large assortment of dies is available for pressing other types of heads and special sizes can be spun where practical.

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ROUNDUP of Key Developments in Atomic Energy

U. S. Reactor Makers Looking to Foreign Market

The growing recognition that the market for nuclear reactor equipment will develop sooner abroad than in the United States has led an increasing number of U. S. firms into technical and trade agreements with companies abroad. Such agreements take on importance because it is expected that, as industrialized countries develop their own reactor equipment manufacturing facilities, the market for direct sales of complete U. S. reactors will decrease.

Not surprisingly, the incentives at work for establishing foreign tie-ups and the mechanisms of such arrangements are not very different from those in other areas of industry. In fact, many of the companies in the nuclear business are merely extending already-existing relationships with foreign concerns to cover atomic energy also.

The emergence of the trend to such agreements has been reported in NUCLEONICS,* and early this fall a survey was undertaken to study its nature and extent, motives and goals.

Patterns

Almost at once it became apparent that most firms consider the details of such arrangements company-confidential. Nevertheless certain patterns do seem to emerge.

For one thing, there is a spectrum of types of international agreement. They range from a simple cross-licensing of technical information, through marketing agreements and actual collaboration in design and construction on a project, to setting up of jointly-owned subsidiaries.

For another thing, the firms that have had the greatest success to date in selling reactors abroad seem to be the ones that have been pushing international agreements the hardest. AMF, with its eight research and one power reactor sales overseas, was the first to enter into a foreign partnership (although it should be added the partnership with Mitchell Engineering Ltd. is involved only in the one power reactor project). Westinghouse, with two sure foreign power reactor sales and some three more in negotiation, has concluded licensing agreements in two countries and is close to completion of two more. It is only fair to point out, however, that this may be due simply to general foreign-market-consciousness rather than to cause and effect, for there are exceptions such as Atomics International, which has sold five research reactors in four foreign countries, but none so far in the one country, Sweden, where it has a commercial agreement; and NDA, which has set up "NDA Europe" jointly with two Belgian nuclear firms as a result of its close collaboration with the Belgians on that country's test reactor project (rather than the other way around).

The survey also shows that nearly all the agreements follow standard commercial practices. The few that deviate—that are peculiar in character to the atomic industry—are generally so because of the high research and development costs, the high initial investment cost, and the great amount of physics as well as engineering design work involved in nuclear power plants. Really unique are only two: the AMF-Mitchell partnership and NDA Europe.

Unique Pacts

The AMF-Mitchell deal is purely a "gentleman's agreement" with no formal integration, no joint capital expenditure. It follows the arrangements adopted by two of the British nuclear consortia, and is a manifestation of the same predicament: no one company can cope with both the physics and the engineering load. Under it, AMF is to provide the reactor and instrumentation, be responsible for all physics, design and operational aspects; Mitchell is

* NU, March '56, 24; Feb. '57, R4; April, 17; June, 23; July, 19; Aug. 19, 27; Oct., 28.

ACF, Kaiser get U. S.-Calder design job

The proposal of Kaiser Engineers to design an American version of the Calder-type reactor, as called for by Congress (NU, Oct. '57, 22) has been adjudged best of 31 by AEC. The team of Kaiser and ACF Industries as subcontractor will get a cost-type contract to design the 40-Mw(e) natural-uranium graphite-moderated gas-cooled unit. A report on the design, including cost estimates and proposed construction schedules, is to be submitted by April 1 to the Joint Committee on Atomic Energy.

Cruiser keel-laying moved up; Skate at sea

The keel for the cruiser *Long Beach*, the Navy's—and the U. S.'—first nuclear-powered surface ship, will be laid ahead of schedule on Dec. 2 at Bethlehem Steel's Fore River shipyard at Quincy, Mass. Originally not scheduled to take place until early spring, the traditional hull construction starting ceremony could be advanced because the new building basin in which *Long Beach* will be built is nearing completion. The date chosen commemorates the first chain reaction achieved at Stagg Field by Enrico Fermi just fifteen years earlier . . . Meanwhile *Skate*, the Navy's third A-sub and first production model (*see p. 27*), sailed on her trials six months ahead of schedule and ran submerged for 4 hrs at better than designed full speed. She put to sea 5 months after launching, whereas *Nautilus* and *Seawolf* had required a year or more of fitting-out.

main contractor for the rest. No patent agreements are involved. Both companies operate on comparable profit margins and in accordance with the amount of work undertaken; both sign the contracts.

At the other end of the scale is the establishment of NDA Europe, a joint subsidiary of NDA, Belgonucléaire and Societé Générale des Minerais, capitalized at 500 shares worth $2,000 each and held 200, 30, and 232 respectively (the remaining 38 shares are small personal Belgian subscriptions). Main purpose of the company, says managing director André de Jaer, is to act as representative of NDA for products developed by it. Initially the company will not fabricate, but if a manufacturing requirement arises, Belgonucléaire—itself a 28-firm combine (NU, April '57, 27)—will place the work with one of its members. The initial market is Euratom and other West European countries, except apparently Britain, but Jaer would welcome an arrangement covering Britain "at a suitable time." Like its American parent, NDA Europe is impressed with possible reactor development based on natural uranium, heavy water moderation and sodium coolant; there are those who believe that support of this type by the powerful Societé Générale may materially influence the development of Euratom itself.

Representative Pact

One of the best descriptions of a basic type of international agreement and the philosophy of a company in making them is that furnished by Westinghouse, which through its International Company has concluded license and technical assistance agreements with ACEC in Belgium and Fiat in Italy, and is nearing completion of negotiations on two others with Siemens in Germany and Mitsubishi in Japan.

"The two [completed] agreements are essentially similar," Charles H. Weaver, vice president for atomic power, told NUCLEONICS, "to those covering conventional power and other equipment with 91 companies in 24 countries. They are full-fledged arrangements having the effect of putting our licensees in the business of building and selling complete atomic plants. They provide design and manufacturing information on systems and components making up the nuclear steam generator. The agreements cover not only pressurized water re-

Foreign Agreements of U. S., U. K. Nuclear Companies

U. S. firm	*Foreign firm*	*Nature of agreement*
Alco Products	Humphreys & Glasgow, Britain	Building, marketing 10-Mw power reactors
AMF Atomics	Mitchell Engineering, Britain	Joint design & construction of nuclear power plants
AMF-Mitchell group	L. & C. Steinmüller, Germany	Small reactor projects
Atomics International	ASEA, Sweden	Joint design & construction of nuclear power plants
Catalytic Construction Co.*	Furukawa Electric Co., Japan	Design of a U-refinery
Chicago Bridge & Iron	Motherwell Bridge & Engineering, Britain	Horton-type construction for reactor containment spheres
Central Research Labs	H. M. Hobson Ltd., Britain	License to make and sell CRL's Mark-VII master-slave manipulator
Combustion Engineering (collaboration, no pact)	Royal Company De Schelde, Netherlands	Nuclear propulsion of ships
H. K. Ferguson	John Laing & Son, Britain	Common front in complete handling of large nuclear chemical plants
Foster Wheeler	Vereinigte Kesselwerke, Germany	Supply of FW designs and experience
Foster Wheeler	Kockums shipyard, Sweden	Nuclear ship design data
General Electric (being explored)	Tokyo Shibaura Electric, Japan	Supply of GE data, parts for a boiling water reactor
General Electric (being explored)	AEG (German General Electric)	Exchange of data and licenses
Gibbs & Hill*	Nissho Trading Co., Japan	Data on reactor construction, operation, safety
High Voltage Engineering	Leybold Hochvakuum-Anlagen, Germany	German representative for HVE Van de Graaffs
Kaiser Engineers	C. Itoh & Co., Japan	Joint development of nuclear plant construction in Japan
Nuclear Development Corp. of America	Societé Générale des Minerais *and* Societé Belgonucléaire, Belgium	Joint development of nuclear plant services and construction in Europe
Westinghouse	Ateliers de Constructions Electriques de Charleroi, Belgium	Exchange of technical information, licensing of foreign firm to build and sell Westinghouse-designed reactors abroad
Westinghouse	Fiat, Italy	
Westinghouse*	Siemens-Schuckert, Germany	
Westinghouse*	Mitsubishi, Japan	
Westinghouse	Johnson Co., Sweden	Sales representative in Sweden

* Under negotiation

British firm	*Foreign firm*	*Nature of agreement*
Babcock & Wilcox Ltd.	Götaverken shipyard, Sweden	Collaboration on ship reactor designs
Babcock & Wilcox Ltd.	Stork Bros. Royal Machine Factories, Netherlands	Construction of reactors
Babcock & Wilcox Ltd.	Hitachi, Ltd., Japan (under consideration)	Construction of reactors
AEI-John Thompson Nuclear Energy Co.	Royal Company De Schelde shipyard, Netherlands	Joint offer to build first Dutch central station
Isotopes Development Ltd.	Landis & Gyr, Switzerland	License to make ID radiation protection equipment

actors but all other types which Westinghouse is developing or will develop. They are two-way—in other words, if a licensee develops improvements they will be available to Westinghouse in the U. S. They do not preclude direct sales by Westinghouse.

"As with conventional equipment, the decision to enter into such agreements is made from the standpoint of over-all profit prospects for a given market. They are expected to enhance our direct sales of both power plants and components in the foreseeable future. In atomic sales the government of the customer's country is understandably an important factor in each transaction. Because of this, and because of the large dollar value of an atomic installation, it is considerably easier to complete a sale if a license arrangement is already in effect in the country involved.

"In many cases we will be able to participate in a project by furnishing critical or other equipment while our licensee supplies other portions. During this transitional stage our licensees must master the problem of fabricating to close tolerances which is typical of atomic manufacture. We also expect to sell complete power plants of advanced design on which our licensees have not gained full experience. Such direct sales depend on our maintaining leadership in design and manufacture through continuous advances in this young field.

"The agreements grant certain patent rights to our licensees, but we are relying only to a small extent on our patent position, since the majority of patents prior to 1954 are in the hands of the government.

"We plan to cooperate with our licensees on atomic projects not on a joint basis but rather on a basis of prime responsibility either for Westinghouse or for the licensee, with the other party in a secondary role. In addition to the Mitsubishi and Siemens negotiations, we expect to reach agreements with a few other oustanding manufacturers in Western Europe, so that we have license arrangements in most of the world's highly industrialized countries."

Specifically, this means—in the case, for example, of the Fiat deal, which is almost identical with the ACEC pact—that Fiat will build complete reactors and reactor parts within its own industrial set-up, without outside capital. Fiat will supply manpower, plant capacity and materials, while Westinghouse will contribute designs, technical assistance and engineers. U. S. personnel working with Fiat for Westinghouse are to get normal U. S. salaries in dollars, plus per diem.

Financing Scheme

From Japan, NUCLEONICS learned a little of the financing involved in such an agreement. Under the Mitsubishi agreement (now awaiting government approval), the Japanese firm would make an initial payment of $1-million over a five-year period. Royalties would amount to 4.5% for the first $50-million sales, 4% for the next $50-million, and 3.5% for sales above $100-million. In case of new nuclear discoveries or original construction methods by Mitsubishi, Westinghouse would have an opportunity to buy patent rights, payments to be determined for each individual case. Mitsubishi will pay expenses ($2,000–$5,000 per person) for engineers it sends for training to Westinghouse, for three months or a year. The Japanese company may also request technical information of Westinghouse that the latter has not yet gathered, and would then pay a fee for this service. Mitsubishi may export reactors only to those countries to which it may export electrical appliances under existing accords, i.e. in the belt of Asia extending from Iraq and Saudi Arabia to Malaya, Borneo, Taiwan and Korea. On export sales, Mitsubishi is to pay 1% additional royalty.

Westinghouse would initially supply Mitsubishi with information and parts for building a pressurized water reactor, later an aqueous homogeneous. Japan feels she can manufacture 30–60% of the parts for a PWR, if furnished blueprints, design sheets and calculations. Government approval of the agreement is expected next year, although there is opposition on the grounds that 1. reactor manufacturing should be done on a national, not a private, basis; 2. the government has all but decided to make its first power

New Elk River bids sought . . .

Just six days after it cancelled Wolverine contract negotiations (NU, Oct. '57, 21), AEC invited industry "to submit proposals to design, develop, construct and test operate" the power reactor plant project for Rural Cooperative Power Ass'n. of Elk River, Minn.—thereby dropping AMF Atomics out of the picture. AEC said it was asking bids "because agreement on a ceiling price could not be reached with AMF." A cost-type contract with maximum ceiling price is still envisaged. General Electric, with its success at Vallecitos (see p. 21), was one firm that said it intended to bid.

. . . and RWE proposal withdrawn

The AMF Atomics–Mitchell Engineering nuclear group withdrew its offer to build a 15-Mw(e) power reactor for the RWE utility of Essen, Germany for $7.25-million. Reasons: 1. Increased cost; 2. refusal of AEC to permit operation of the urania-thoria core abroad before the reactor's twin and prototype at Elk River proved out the core, requiring AMF to substitute stainless-clad uranium oxide elements; 3. the proviso of the U. S.-German power bilateral requiring RWE to assume all liability for the fuel from the moment it took delivery in the U. S. AMF is submitting a new offer based on the revised stainless-clad core design, but RWE meanwhile has asked the British nuclear syndicates to bid, and their offers are expected in a month. RWE is reported to be ready to build a nuclear power reactor in any case, even to spending ten times more for a 200-Mw(e) Calder-type. However the German utility has set up prerequisites to closing a deal for a Calder-type—demands for performance warranties and assurances on cost figures and safety. Thus far no British group has made them an offer of this type.

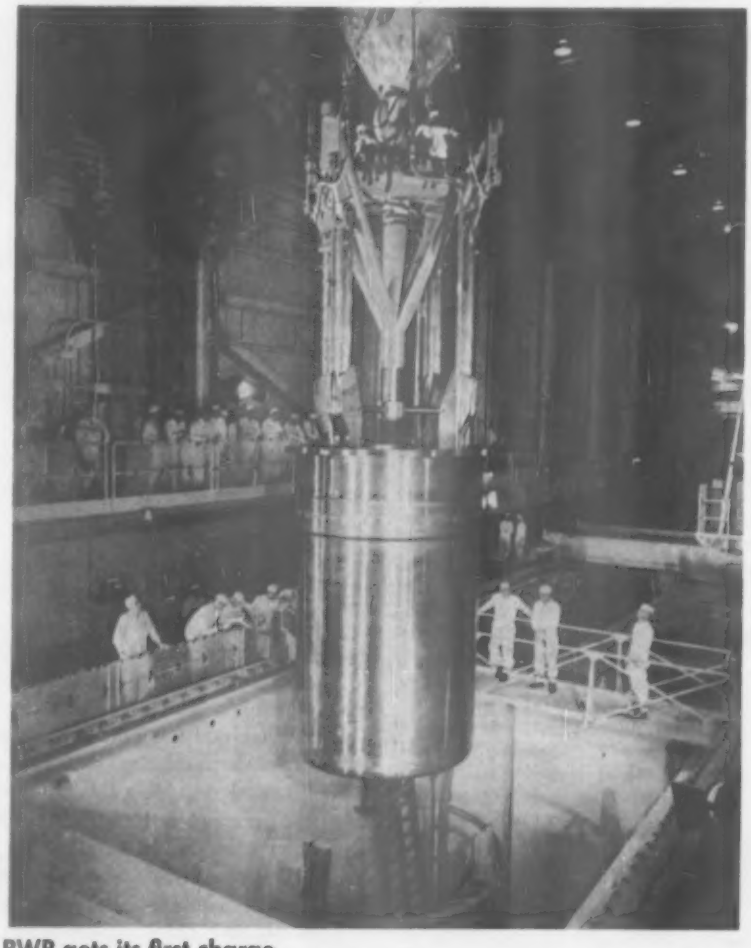
reactor import a British Calder-type, and cannot afford a second for 6–7 years, making a pact with a U. S. firm unnecessary; and 3. Mitsubishi competitors object to its nuclear "monopoly."

Other Agreements

Not dissimilar are single agreements by Atomics International, Alco, and Foster Wheeler. They do differ among themselves in their approach to the patent problem: Alco has no patent provisions in its agreement, FW provides that use of patents is made available on a royalty basis. The reasons given for making the pacts are interesting: FW says it and its foreign partner gain know-how that would be costly to develop without assistance. AI, whose agreement contemplates mutual aid between the parties in design, construction, and installation of nuclear power reactors and general nuclear research and development, refers to the benefits accruing from sharing the experience and sales relations of each firm. Alco feels it can thus "minimize whatever nationalistic trade barriers may exist," and get lower production costs abroad in fabrication of Alco-designed nuclear systems. Alco's partner, Humphreys & Glasgow, which gets sale rights to Alco reactors outside North America, is undertaking an extensive marketing survey on four continents. This, incidentally, is a three-way deal with Alco contributing know-how and designs, H & G sales and construction, and Daniel Adamson & Co. Ltd. fabricating the components.

Alco is negotiating no other overseas marketing agreements. AI is "interested" in further deals, but has completed none. General Electric told NUCLEONICS it "is looking into the possibility of entering into licensing and technical exchange agreements and is currently having discussions with several leading foreign firms in this respect." ACF Industries also has been negotiating with foreign firms "to act as our agent or to manufacture ACF-designed nuclear products under license." General Dynamics is "not now negotiating an agreement with a foreign firm but we are contemplating doing so in the rather near future; the device we expect to employ is that of a foreign corporation partly owned by ourselves and partly owned by foreign industry, thus guaranteeing long-term returns beyond the time when foreign know-how has caught up with ours."

Reasons given by foreign countries for making overseas agreements are very much like those put forward in the U. S. "It pays off to buy atomic experience and know-how in certain fields rather than engage in costly experiments," is reported as the fairly widespread consensus among Swedish firms. German firms even more—since Germany was barred from all nuclear activity prior to regaining sovereignty in 1955—find it profitable to conclude agreements with U. S. firms having vastly greater nuclear experience. The Germans are less inclined to enter into ties with British firms as the latter are already limiting themselves to one reactor type and the Germans are unwilling to do so with the clear superiority of that type still unproved. Furthermore British firms are largely grouped together in consortia covering all aspects of reactor design and construction, hence seek complete reactor orders leaving a German partner little chance to get a piece of a project. The pattern of agreements with U. S. firms is that the American firm does the planning and supplies the reactor itself and control systems, while the German firm supplies the pressure vessels, heat exchangers, buildings, etc. With the savings on freight and lower European wages, the U. S. firm can quote lower than if it supplied everything from the U. S. The German firm gets the benefit of U. S. experience and reputation.



PWR gets its first charge

In the tense—and antiseptic—atmosphere of an operating room, the 58 tons of PWR's first core was gingerly lowered with 0.06-in. clearance into the reactor vessel, on Oct. 5. The core basket was fully loaded with its cargo of 14 tons natural uranium and 165 lb highly-enriched U, arranged in 113 blanket and 32 seed fuel elements. The precision job took hours, using specially-accurate jacks, grapple, crane and controls

Worried Industry Rallied By Progress Noted in N. Y.

A perplexed industry came to New York for Nuclear Week (The Atom-Fair, Atomic Industrial Forum and American Nuclear Society meetings) compared notes on its problems, and found reassurance in reports of progress on existing reactor projects. As Walter Zinn put it,

"Compared to one year ago, we're in a much better situation, because we have brought into operation five reactors: two boiling reactors—Argonne's Experimental Boiling Water Reactor and General Electric's Vallecitos reactor; one pressurized water—the Army's package power reactor; the Sodium Reactor Experiment and the Organic Moderated Reactor Experiment. Now we can begin to get results—we've put some money in the bank and we can begin to draw on it."

It would be futile to deny that the mood at the Forum meeting and the Atom Fair was one of grimness, at least in comparison to a year ago. By the same token, most of the responsible industry leaders reiterated the view that the present reported curtailments amounted to growing pains, not an illness, of the industry. Contends one observer: 1957 will go down as the year in which capital costs went up; 1958 will be the year in which it will be realized (as APPR, EBWR and Vallecitos already show) that these early reactors have been over-designed and have capacities greater than expected—so that per/kw cost will be seen to come back down again.

Privately, many leaders will admit that though the root of the problem may be economic, the current confusion in industry stems from the lack of leadership that is the result of lack of harmony between AEC and Joint Committee.

In his keynote address to the Forum, Westinghouse's atomic vice president Charles H. Weaver said,

"Our industrial planning would be more realistic and prudent if the Government were to prepare a restatement of its objectives and its program." And again, "I am sure we all agree by this time that the nuclear development bill is just too high for industry alone to pay in a short space of time. . . Government must recognize the limitations of American industry and support it in a more positive and thorough manner than in the past. . .

"Certainly, some of our current difficulties in the atomic business stem from overoptimism as to the time-scale and effort requirements of nuclear development. . .

"I am just as enthusiastic today as I was when I first met an atom nine years ago, even though I hear complaints all around me regarding high costs and big losses. I hear about a few companies getting out of the business, but I ask myself, "Did they take time initially to know what they were getting into?" Let's face it—the atomic industry should not be expected to support the magnitude of business interests that has ventured into the field. . .

"I think that remarkable progress has been made in developing the atom in this country. The U. S. is very much first in the world in the accumulation of nuclear technology, and that is where we are going to stay."

News Items

Here are some of the news highlights gleaned at the meetings:

• **EBWR.** In the 10 months it's been in operation, EBWR has logged 2,000 Mw days, or the equivalent of 100 days at full power and "has never failed to perform upon demand." Although present operating cost has been calculated as 52 mills/kwh, this could be reduced to 32 mills, according to project chief J. W. Harrer, simply by using a 5-ft instead of 4-ft core (already provided for) and thereby raising output by 50%. Then, if four identical EBWRs were to be built in one multiple-reactor station —with no extrapolation of design but based on existing experience—operating cost would come down to 12.1 mills because of fuel fabrication unit cost.

• **APPR** has accumulated 3–4-million kwh operating experience, and "the plant has surpassed our expectations," reports Alco's Kenneth Kasschau. "It has met or exceeded the design specifications in all respects, at least in those determinable in the early stages of operation."

• **S1W** (the *Nautilus* prototype in Idaho) has since 1953 developed the equivalent, in shaft horsepower available, of 50-million kwh—showing good availability factor. "During the past 18 months the plant has been cooled down and started up over 60 times for crew training or to install test equipment," said plant manager J. M. Yadon; "as any power plant man can tell you, this type of operation is rigorous duty for a plant."

Gas-cooled Merchant Ship Reactor Bidders

Prime contractor	*In association with*
Aerojet-General Nucleonics	Westinghouse *or* Nordberg Mfg. Co. *or* Worthington Corp. *or* Allis-Chalmers
Aeronutronic Systems	Bechtel Corp. and General Nuclear Corp. of America
Alco Products	McMullen Associates, McMullen & Nickum and GE (gas turbine division)
Allis-Chalmers	Sylvania-Corning and Internuclear Corp.
American Standard	Solar Aircraft Co., Matson Navigation Co., Willamette Iron & Steel Co., and George Sharp, Inc.
Armour Research Foundation	Joy Mfg. Co., Sargent & Lundy, and Metals & Controls
Atomics International	Westinghouse
Bell Aircraft	Carborundum Co. and Worthington Corp.
Borg-Warner	Nuclear Development Corp. of America and Westinghouse
Curtiss-Wright	Lummus Co., George Sharp, and Sanderson & Porter
Ford Instrument	Westinghouse
General Dynamics	Clark Bros.
General Electric	none
General Motors	Battelle Memorial Institute
Martin	Thompson Products
Pratt & Whitney	Burns & Roe
U. S. Industries	Sylvania-Corning and ASTRA
Westinghouse	none

Eighteen firms bid on developing an advanced gas-cooled reactor propulsion plant for AEC and the Maritime Administration (NU, Sept. '57, 30). Winning bidder will design a land-based prototype, which MA hopes to have completed in 5–7 years

• **OMRE** is in operation, but will be brought to full power only in about two months, project chief Charles Trilling said. "There has been no evidence of any major difficulties or requirements for changes from the original design concepts."

• **SRE** "has performed well; and in fact the performance has, if anything, exceeded expectations," reported Frank Faris of Atomics International. "The operation during the power runs was very satisfactory . . . The stability of the reactor is particularly gratifying."

• **Vallecitos.** "Start-up and subsequent operations of the power plant indicate that it is a complete, unqualified success," said General Electric's Samuel Untermyer (*see story below*).

These were the plants on which operating experience to date was reported to the Forum meeting. In another session, the state of progress on 14 power reactor projects under construction or development was outlined. Highlights:

Dresden station—Both design and procurement are 75% completed; the contract calls for late 1960 completion, but General Electric expects to complete it early in 1960.

Experimental Breeder-2—Design of first major items of construction completed, preliminary construction already underway at the site, major construction activity to start early in spring, to be completed by 1959.

Arbor—Argonne's boiling reactor facility is now intended to be designed with sufficient flexibility to allow it to be operated as a single-, dual- or indirect-cycle reactor.

Homogeneous Reactor Experiment-2—The 259 flanges in the system inspected for stress corrosion (NU, Jan. '57, R4) were all closed in August after 132 were replaced; 10,000 ft of ¼-in. stainless tubing in the leak-detector system was also replaced. The reactor operated completely satisfactorily with hot water for 450 hours in September and October at system temperature and pressure (280° C, 1,700 psig); leak detection tests with krypton-85 tracer are now trying to show that total leakage is less than 1 cc/day. It has been demonstrated that direct underwater maintenance is completely feasible: 30 pieces of equipment were successfully removed and replaced without difficulty. After seal-welding the shield and leak-testing the container, HRE-2 can finally go critical (NUCLEONICS learned that criticality in December may yet be achieved.

Chugach—The present first-phase program (NU, Sept. '56, R1; May '57, 19) is focused on developing a barrier and barrier materials to assure non-contact of sodium and heavy water in case of tube failure, and building a mockup, scheduled for startup March 1, to demonstrate that sodium can be safely circulated at 950° in close proximity to water.

Fermi fast breeder—Erection and pressure-testing of reactor containment building completed Oct. 6; reactor vessel to be moved in in March or April. Piles now being driven for sodium-handling facility; turbine building to be begun in April. All big components ordered; site construction to start in spring.

First merchant ship (*see p. 78*)—Core critical experiment at Babcock & Wilcox's Lynchburg plant is virtually completed (NUCLEONICS learned it is scheduled to start up in December). General Electric will supply control rod drives.

'Water Reactor' Focus Urged

One proposal that took industry by surprise was that made by W.

Shake-Out Hits Nuclear Industry; Good Omens Alleviate Situation

A "shake-out" in the nuclear business, long forecast and yet breaking with the unexpected suddenness of a summer rainstorm, hit the industry last month.

The bad news was by no means unalleviated—there were announcements of new projects, lower-than-expected costs for one major power reactor, and other encouraging signs. But it was clear that a long-expected narrowing of the field of entries had begun.

As long as a year ago it had been said that "the men were beginning to be separated from the boys" (NU, Oct. '56, R6), yet no major firm had dropped out of the race until last month. Furthermore, among last month's casualties at least one fell for reasons entirely irrevelant to nuclear problems.

There had been some signals of smoldering late in summer, but the spark that touched off the situation was the Sept. 17 hearing at which Congress was informed that AMF Atomics and Foster Wheeler had felt obliged to increase their prices on the Elk River and Wolverine power demonstration reactors respectively (NU, Oct. '57, 19). Subsequently, both firms' proposals were dropped by AEC, which asked industry for new proposals in the case of Elk River, and ordered a reevaluation of Wolverine by Oak Ridge.

Bad News

Here are the firms that figured in the bad news:

• Foster Wheeler was reported to have decided to drop its power reactor business, liquidate its nuclear division, and concentrate on fabrication of heavy components. The company however denies this categorically. It is not closing up shop, but is "going through a cooling off period," says a spokesman; it is keeping the key men in its nuclear division and will quote on other power reactors. The nuclear division has been cut back to "about a dozen" from the peak of about 60 to which it built up in anticipation of heavy work on Wolverine.

• Bell Nucleonics division of Bell Aircraft folded, for reasons having nothing to do with the nuclear market. The parent company lost a major missile contract and felt it could no longer afford the luxury of nursing a future-directed branch that was not yet making money. Bell is still in the nuclear business to some extent; its Rocket division has a component-fabrication job, is looking for more.

• AMF Atomics, upon its loss of the German RWE power reactor job following the loss of Elk River, decided to concentrate on research reactors—in which it is a leader with 12 sales—and forego power reactor work.

• General Electric let 100 of its Vallecitos staff go late in summer, understood to be a result of near-completion of design of the Dresden station, and no new work. Other companies that carried out reductions in force were Sylvania-Corning, Walter Kidde Nuclear Labs, NDA, Pratt & Whitney's nuclear aircraft division.

• With singularly poor timing, AEC chose the week before Nuclear Week to announce that it had "suspended activities directed toward the design and construction of the Food Irradiation Reactor (FIR) and will terminate its contract with Kaiser Engineers for development work on this project." Explanation was that the Defense Department was studying alternative sources of gamma

Kenneth Davis, AEC's director of reactor development. "When we examine the prediction that sound decisions can be made in 1963 or 1964 to build nuclear power plants on a substantial scale which can confidently be expected to be economically competitive in the U. S.," Davis said, "I think we must conclude that such power reactors must be of the 'water' class. It does not now appear likely that such reactors as the aqueous homogeneous, fast breeder, liquid metal fueled, sodium-cooled graphite, or even more advanced concepts can be successfully exploited commercially by so early a date. In the category of 'water' reactors I include all water-cooled or -moderated reactors, whether they be pressurized, boiling, or combination of both, whether they utilize light or heavy water, and regardless of their design features. I would include also organic-cooled and -moderated reactors, which are quite similar to the water reactors.

"This is not to say that prototype and demonstration reactors of different and more advanced types should not be built as required by the overall development program—quite the contrary. However, it does seem important to distinguish between types of reactors which ought to be developed because of future promise and those which can and should be pushed so that they can be exploited industrially at an early date.

"My own opinion is that, although water reactors will not ultimately have the lowest nuclear power costs, they can be developed during the next 10–15 years to a point where they have a vast field of utility abroad and can compete with conventionally-fueled plants in a substantial portion of the U. S. It is this conviction which lies behind my belief that we need to adopt a policy of concentrating on water reactors, even though this may require slowing down the effort on more advanced types of reactors.

"It is my conclusion that at least some version of the water reactor class . . . can be developed to a point where they can be utilized on an economic basis not only abroad but in those parts of the U. S. where conventional fuels are relatively costly—and that this can be done during the next 10 or 15 years."

During Nuclear Week, NUCLEONICS heard a report to the effect that, following a meeting with AEC of the unofficial committee of reactor advisors (NU, Aug. '56, R2), the reactor development division was sketching a new reactor program to present to the full AEC.

Strauss, and Another Tack

The previous evening at the all-conference banquet, AEC chairman Strauss told an audience of 1,000 that "our role clearly is to explore and develop the widest possible range of the most promising types of reactors. We believe this course to be the one best calculated to insure continued leadership for the free world. . . .

"We are presently engaged in a contest in which most of the horses in the field are closely bunched at the quarter post. We do not know which ones will stay the course or pay off at the finish line. It is a race at this point. That is not to say, however, that—in terms of acquired technology—they are all running neck-and-neck. There are some types of reactors—for example, the 'water' reactors—that are in a comparatively advanced stage of development."

radiation such as long-lived isotope or spent fuel elements. The Army Quartermaster Corps, which was working with AEC on FIR (NU, Dec. '56, R7; Jan. '57, R3; April, 28), said the halt may be only temporary.

• The Defense Department budget cutback imposed by Congress in summer resulted in still another stretch-out for the nuclear airplane program (NU, March '57, R6; April, 20); and in abandonment of Bell Laboratories' plans for a research reactor at Whippany, N. J., to do research for the Air Force (NU, Jan. '57, R8). A sweeping nuclear plane cutback was reported at Oak Ridge.

Good News

Two nuclear firms were sufficiently undaunted to announce new services at this time:

• Nuclear Materials and Equipment Corp., of Apollo, Pa., offers uranium oxides, carbides, metallic alloys and other fuel forms in various enrichments. It claims to be the industry's first completely integrated facility for producing and fabricating fuel materials and recovering unirradiated scrap. Numec also offers corrosion, mechanical and physical testing.

•Holmes & Narver Inc., engineering firm that has been in the military side of the field since 1948 as planner and builder of the Eniwetok proving ground facilities, has formed a nuclear engineering and construction division. Its specialty will be nuclear safety, and it will concentrate on hazards evaluation, site selection, containment and waste disposal.

During Nuclear Week, Samuel Untermyer, GE's manager of reactor operations at Vallecitos, dramatically announced to an Atomic Industrial Forum meeting that the Vallecitos boiling water reactor (NU, Sept. '57, 21) had been built for $2.5-million—half a million less than GE's board of directors had budgeted (Pacific Gas & Electric however spent an additional half a million for a turbo-generator not originally contemplated)—and that the reactor could produce "substantially more power than the 5 Mw(e) for which it is now licensed. We expect that it ultimately will produce enough steam to generate about 10 Mw(e)." He cautioned that the costs cited do not include land, supporting facilities, or administrative expenses. His announcement came just four days after 5 Mw of electricity from the reactor was fed for the first time into PG&E's grid for distribution, only 17 months after the decision to build the reactor was made.

A Trial Balance

Seeking to grasp the meaning of all this, many old hands in the business felt that it would be wrong to regard the present retrenchment as a sign of doom; that while things may be unhealthy for a few individual companies, the industry as a whole is not ailing. They support this view for two reasons:

1. To a considerable extent the situation may be regarded as a consolidation of an overextended position. It had been said openly for more than a year that many of the firms now in the field had been attracted in by the glamor of the atom, unrealistically appraised; certainly some had promised more than the state of the art permitted their delivering.

2. In some cases, as in that of Bell Nucleonics, the casualty was inflicted in a ricochet effect by the defense budget cuts made by the last economy-minded Congress. The outlook—in the light of *sputnik*—is rather for a reloosening of the purse strings when Congress returns.

Cole is IAEA Director; Draft Program Accepted

W. Sterling Cole, Congressman from New York for 23 years and a member of the Joint Committee on Atomic Energy since its establishment, was unanimously appointed and confirmed Director-general of the International Atomic Energy Agency at that body's founding conference in Vienna last month (NU, Oct. '57, 28). It had been reported that the Russians, who earlier had let it be known they would not oppose the naming of an American, were going to support an Indian delegate instead; but they contented themselves with a statement setting out their preference for a national of a neutral country, then voted for Cole. The New Yorker, whose term runs four years, assumes his duties Dec. 1 and has resigned from Congress as of that date.

Ten more nations were elected to the 23-nation Board of Governors of IAEA (13 had previously been named by the Preparatory Commission). The Board's roster: Argentina, Australia, Brazil, Canada, Czechoslovakia, Egypt, France, Guatemala, India, Indonesia, Italy, Japan, Korea, Pakistan, Peru, Portugal, Rumania, Sweden, Turkey, Union of South Africa, USSR, U. K., and U. S. Pavel Winkler of Czechoslovakia was elected chairman of the Board of Governors for the first year, Max H. Wershof of Canada and Hiroo Furuuchi of Japan vice chairmen. Robert M. McKinney is the permanent U. S. representative to the Agency and U. S. delegate on the Board. Fifty-seven nations are now Agency members.

U. S. Offers Reactor

U. S. AEC chairman Lewis L. Strauss, who headed a 35-man U. S. delegation to the conference, offered IAEA—subject to Congressional approval—a research reactor, an isotope lab and a comprehensive technical library. The U. S. had already made an offer of 5,000 kg of U^{235} plus a matching of any offers by other nations. There were three, promptly matched by the U. S.: Britain offered 20 kg of U^{235}; Russia 50 kg U^{235} in any concentration up to 20%; and little Portugal pledged a handsome 100,000 metric tons of uranium oxide in the form of concentrate (equivalent of about 700 kg U^{235}). These offers, if accepted by the Agency, would total 5,140 kg U^{235} and ~200,000 kg natural uranium. Russia also offered to train 50–100 postgraduate students in Soviet institutions with 50 fellowships for nationals of underdeveloped areas.

COLE (right) accepts congratulations from Russia's Emelyanov, as U. N.'s Bunche beams

The first year's program outlined for the Agency by the Preparatory Commission (NU, Sept. '57, 26) was adopted; delegates described it as "modest," "realistic," "practical."

U. S. observers attending the conference said they felt one of the most salient things about it was the businesslike, let's-get-on-with-the-job attitude of the Russians—once the now-standard U. N. gambit of trying to win entry for Red China had been tried and failed. The Russian delegates were described as having "negotiated hard, but not intransigeantly." And yet, only two days after the conference closed on Oct. 23, chief Soviet delegate Vassily S. Emelyanov, head of the USSR Central Atomic Energy Utilization Board, loosed a bitter tirade against the Agency.

At a press conference, he said one major power [the U. S.] was not treating other Agency members as equals but that its cooperation was "like that between rider and horse"; that it planned to use the inspection system as a means of interfering in the domestic affairs of beneficiary nations, and that it would turn IAEA into a commercial affair. He said the statute of the Agency—which Russia had signed and ratified—was open to interpretation, and that the Soviet Union would resist the inspection and controls written into the Statute.

A Loss in JCAE

Rep. Cole's loss will be keenly felt by the Joint Committee, where his had long been one of the most statesmanlike, and influential, voices. One who is already actively campaigning for the vacant committee seat is perhaps the only man in Congress with working experience in a national laboratory. He is Craig Hosmer (Rep., Calif.), who worked at Los Alamos before running for Congress, and who has continued to follow atomic developments closely.

U. K. Civil Stations to Make 8-Mill Power—Cockcroft

In one of the frankest talks yet about the British nuclear program, Sir John Cockcroft, director of research in the U. K. Atomic Energy Authority, said his country expects nuclear power to cost about 10% more than coal power in 1960, to reach parity about 1963 and to be 30% cheaper than coal by 1970.

Addressing the Twelfth American Assembly (*see p. 77*), Cockcroft said the civil stations now being built for 1960 completion would have capital charges of ~5 mills/kwh and net fuel costs of 2½–3 mills, for an overall power cost of about 8 mills/kwh. This, Cockcroft pointed out, is lower than the 11–14 mills quoted by Walter Zinn for the cost of power from improved Calder-type reactors built in the U. S., because construction costs (because of higher labor rates) and capital charges are each 50% higher than in Britain.

Of Calder Hall, Sir John said that since it was built primarily as a plutonium producer with electricity as a by-product, and since it was "designed on very conservative lines, being the first of its kind, . . . there is little sense in asking questions about its economics."

Later British reactors will have initial charges of slightly-enriched uranium, he declared. "But by the mid-1960's we will probably recycle the secondary fuel plutonium produced in our reactors. This will provide the necessary enrichment and will at the same time reduce the natural uranium feed to the reactor four- or five-fold. . . . We have carried out enough experiments to be satisfied that some plutonium-enriched fuels will behave well in reactors."

Of 20,000 fuel elements in the two operating Calder reactors, only three have failed, he reported, adding that AEA was pleased with the first year's operation. He told NUCLEONICS Britain will definitely not subsidize its nuclear industry in the export market.

Reactor News

FORD MOTOR PLANS NUCLEAR LAB

An $8-million research, development and prototype center is planned by Aeronutronic Systems Inc., a subsidiary set up by Ford Motor Co. in May 1956 to work in electronics, nucleonics, aeronautics, computers and weapons systems. Aeronutronic has acquired a 200-acre site at Newport Beach, Calif., plans a critical facility and a hot lab for fuel element examination, a low-energy accelerator for radiation damage studies, and is exploring the possibility of placing a propulsion prototype reactor underground nearby. Construction is to start at once; 3,000 will be employed at the plant on completion. The firm told NUCLEONICS it "is currently engaged in studies . . . on a number of reactor types such as molten salt, gaseous fuel with the uranium as a gaseous compound or an aerosol-type suspension, and gas-cooled. The various types are being considered for both electrical power generation and for propulsion, particularly maritime propulsion."

AMF'S CANADIAN FUEL PLANT ON LINE

Built in barely a year, Canada's first fuel element plant —completed at Port Hope, Ont., by AMF Atomics (Canada) Ltd. (NU, Sept. '56, R9)—turned out its first fuel rod last month. The initial 36,000 ft³ unit, expected to develop into a large nuclear facility, will provide fuel for Canadian reactors, using Canadian U ore refined at Port Hope. At present only unenriched metallic uranium elements are produced, but plans are being considered for fabricating enriched rods, oxide slugs, and sintered or ceramic fuels. Die extrusion equipment will be installed to bond aluminum cladding onto the uranium meat.

GE DESIGNING AEC'S 14TH PU REACTOR

As expected, General Electric, operator of AEC's Hanford works, has been asked to prepare the engineering design called for by Congress on a new plutonium production reactor. Congress voted $3-million for design only, (NU, Sept. '57, 22) but did not authorize construction, of this unit, which may be a dual-purpose --power-and-plutonium—reactor. (The U. S. now has 13 Pu reactors, but none are dual-purpose—all dump their heat.) A report on design, cost estimates, and construction schedule is to go to Congress by April 1.

GA UNVEILS RESEARCH REACTOR FAMILY

The new safe research reactor principle General Atomic has been working on (NU, Nov. '56, R8; June '57, 19) has resulted in design of a family of three reactors for research, training and isotope production. All share the new solid-homogeneous core: a solid mixture of 20% enriched uranium and zirconium hydride moderator, loaded in 70 aluminum-clad fuel elements. Water occupies 35% of the core volume; the reactor is submerged in a pool, with shielding provided by 16 ft of water above the core. The core design makes the reactor "inherently safe"—a phrase GA defines as "having the property that if all excess reactivity contained in it is suddenly introduced inadvertently, their resultant excursion in power level does not create any damage to reactor or surroundings." IRGA, one of the three, is designed for industrial production of isotopes and does not require a trained operating staff; TRIGA is a training and research version of IRGA with all its isotope-production facilities plus more reactor controls; REGA is built on ground-level instead of in a pit and has beam holes and rabbits for physical, biological and engineering research; it is being offered in a 10–30-kw size.

A-LOCOMOTIVE CRITICAL FACILITY PLANNED

A critical facility looking to building of a nuclear-powered locomotive is planned by Baldwin-Lima-Hamilton Corp. and the Denver, Rio Grande & Western RR, so encouraging were the results of a technical and economic feasibility study (NU, Nov. '56, R9) carried out by the two firms during the past year. Walter Kidde Nuclear Labs provided engineering aid on the project, only industry-financed one in the nuclear rail-power field.

NUCLEAR CARGO PLANE HELD PRACTICAL

Talk of nuclear-powered planes has generally been in terms of nuclear bombers. Lockheed last month said a big nuclear transport plane with a 50-ton payload and 24,000+ mile range "is practical and can be built." Robert W. Middlewood, chief engineer of Lockheed's Georgia division at Marietta (which is working on airframes for the Aircraft Nuclear Propulsion project), envisions a "logistic transport" plane using probably one, but conceivably two, reactors. It would most likely be a propjet, and would resemble in appearance the current C-130 Hercules combat transport. Shielding, to reduce weight, would probably be divided—part around the reactor, part around the crew. A fleet of such planes could airlift a fully-equipped division from the U. S. to any spot on earth, paradrop it, and return to base without refueling.

END OF PRDC HEARING IN SIGHT

A special AEC staff recommended the Fermi fast breeder construction permit be continued in effect, but with modifications. This came in one of the last steps before Hearing Examiner Jay A. Kyle certifies the hearing record to AEC for a decision: filing of findings and conclusions by the three parties to the long-drawn-out Detroit fast breeder safety hearings—Power Reactor Development Co., the three intervening unions, and AEC. The amendments the AEC staff suggested were: six-monthly reports on progress of experimental work to demonstrate the reactor's safety, and the right for AEC to reopen the hearing at any time for new evidence.

AEC YIELDS ON PRIVATE REPROCESSING

AEC has temporarily thrown in the sponge on its long campaign to get private firms to enter the chemical reprocessing business commercially (NU, March '57, R3; April, 19; May, 17). This is the result of a survey AEC made of the chemical industry that "revealed that industry is not ready at this time to undertake radiochemical processing of private fuels under the current AEC program." The survey showed industry's belief that the prospective income from the business available is not sufficient to warrant the risks involved in the large investment required. Therefore AEC will continue to plan to reprocess private fuels for an interim period, as previously announced, with services subject to cancellation on 12 months' notice. Meanwhile AEC's Charles Manly suggested another interim solution at a Nuclear Week session: building of small packaged reprocessing plants to handle the fuel from one reactor.

ROUNDUP

World News

Windscale Shut Down After Accident

Complete shutdown of Britain's two-reactor plutonium production plant at Windscale (adjoining Calder Hall) was ordered by Sir William Penney, director of Britain's nuclear weapons establishment, six days after a serious accident had knocked out Number One reactor (*details p. 130*). Number Two pile, unaffected, had at first been shut down to free men for emergency operations, and then started up again until the complete shutdown order came.

Canadian Uranium Production Rocketing

Canadian production of uranium, worth $48-million last year, is expected to reach a value of $290-million next year, and some trade sources believe it will be substantially higher, according to *The Times Review of Industry*. This would make Canada the world's leading uranium producer, as well as making uranium Canada's most valuable metal export. Shipments abroad are increasing this year at a rate that saw January's $5-million exports rise to $9-million by May.

Japanese Firms Syndicate

A joint atomic energy development will be set up by 14 Sumitomo-affiliated firms, to work for industrial utilization of isotopes. Participants include Sumitomo Bank, Sumitomo Machinery, Sumitomo Chemical, Sumitomo Metal Industries, Sumitomo Trading, and Nippon Electric. The 14 firms joined in April 1955 to study reactor materials, nuclear fuels and industrial use of radiation. The new company will be capitalized at 500-million yen ($1.27-million).

German, Italian Jobs for British Firms

Head Wrightson & Co. Ltd. has received an order for a high-flux Dido-type materials testing reactor for the West German state of North Rhine–Westphalia, as forecast (NU, July '56, R1). This is the sixth reactor order for Head Wrightson and the third for export, two other overseas jobs being for Australia (NU, Oct. '56, R7) and Denmark. . . . Kennedy & Donkin, consulting engineers of London, have signed a contract to provide technical services to Società Elettronucleare Nazionale (SENN) of Italy in connection with the latter's 150-Mw nuclear power station in southern Italy. Services will include assistance in site selection, preparation of bid invitation specifications, and aid in analysis of bids.

Puerto Rican Reactor Center Moves Ahead

AEC and the University of Puerto Rico have signed a contract for operating a Nuclear Training Center to be built by AEC on the island, and fixed-price proposals by U. S. industry have been asked on construction of a 1-Mw pool for the Center (NU, May '57, 23). At the same time AEC announced establishment of a new permanent area office in Puerto Rico, to be headed by John I. Thomas, former deputy manager of Hanford Operations Office, as resident manager. Congress last year appropriated $2.8-million for start of construction and initial operation of the training center.

The reactor, to be suitable both as a training and research facility, will operate on 20% enriched fuel, will have a thermal column and several beam holes, and a 10^{13} flux at the core. It is to be designed for 1-Mw(th) initial operation with capacity for later modification for 5-Mw operation. It will be built at the University's College of Agriculture and Mechanical Arts at Mayagüez, where a training program in nuclear engineering was already started earlier this year. Original plans called for construction of the first research reactor at the University's Rio Piedras campus near San Juan, where basic physics and isotopes techniques are being taught, while Mayagüez was to get a 15–20-Mw(e) power demonstration reactor. When Congress eliminated a $9-million appropriation for the latter, the first research reactor was switched to Mayagüez. It is slated for completion in 1960; bids, due Nov. 12, were asked of 29 firms.

Iron Curtain Notes

Czechoslovakia became the second Soviet satellite country to start up a Russian-supplied research reactor, on Sept. 25, two months after Rumania. The 2-Mw water-moderated and -cooled, 10% enriched unit—the standard Russian export model (sketch NU, April '56, 19)—is at the Czechoslovak Academy of Sciences' new nuclear physics institute at Husinec-Rez near Prague. Poland and East Germany report plans to start theirs this fall, Hungary next summer. . . . Close cooperation in all fields of peaceful atomic energy applications is provided in a one-year pact between Poland and East Germany; exchange of students, teachers and textbooks is called for . . . Poland has set up a commission to study domestic processing of Polish-mined uranium ore and to report by February. This is seen as an attempt to be freed of Soviet processing and refining of Polish uranium.

Greece Gets First Components

The first shipment of parts for Greece's first reactor reached the site of the Democritus Nuclear Research Center near Athens last month. Construction is now underway on the 1-Mw AMF pool, scheduled to start operating in spring.

Pluto Completed, Neptune Nearly, in Britain

Pluto, a British engineering test reactor, went critical at Harwell Oct. 25. A twin of the Dido materials research reactor, Pluto is adapted for materials and components testing with larger test holes, including provision for six test loops. Like Dido, Pluto is heavy water moderated and cooled; despite its suggestive name, it is fueled not with plutonium but with highly enriched uranium. A second Pluto called DMTR (for Dounreay Materials Testing Reactor) is nearing completion next to Britain's first fast breeder (NU, Oct. '57, 26).

Also at Harwell, an experimental zero-energy assembly called Neptune was nearing completion at Harwell. Distinct from the propulsion reactor prototype, which is to be erected at Dounreay (*see p. 86*), its mission is to evaluate the nuclear characteristics of the pressurized water reactor that will drive HMS *Dreadnought*, the Royal Navy's first A-sub (NU, April '57, 21).

The British press has been speculating that Neptune may be an organic-moderated or a D_2O-moderated gas-cooled. NUCLEONICS has learned that Neptune, designed to study "the behavior of light hydrogen," can run on either water or organic, being "just a hole in the ground, a tank and a control room."

News in Brief

AEC Names New Safeguards Committee

AEC has reappointed to the new statutory Advisory Committee on Reactor Safeguards nine men who had served on the old ACRS set up by AEC in 1953, before Congress gave it a place in the law. Those named are:

C. Rogers McCullough, former ACRS chairman
Manson Benedict, nuclear engineering professor, MIT
Harvey Brooks, dean of engineering, Harvard
R. L. Doan, atomic energy manager, Phillips Petroleum
Mark Mills, assoc. director, Radiation Lab, Univ. California
K. R. Osborn, industrial development manager, Allied Chemical & Dye
D. A. Rogers, central engineering manager, Allied Chemical & Dye
Reuel C. Stratton, assistant director research, Travelers Insurance
Abel Wolman, head sanitary engineering dept., Johns Hopkins Univ.

McCullough has resigned as deputy director for hazards evaluation in AEC's division of civilian application, and will return to the development department of Monsanto Chemical Co., although still spending the bulk of his time on reactor hazards evaluation work. The new ACRS, which is required to make public its hazard reports, will be independent of AEC, being as it is the fruit of the Joint Committee's dissatisfaction with the operation of the old ACRS that was a creature of AEC.

Spinrad Gets Argonne Reactor Post

Bernard I. Spinrad has been promoted to director of the Reactor Engineering Division at Argonne National Laboratory, succeeding the late Arthur H. Barnes. Spinrad, 33, a pre-eminent U. S. reactor physicist, joined ANL in 1949.

Sherwood Conference Reveals Steady Progress

Meeting behind closed doors at Princeton University, 189 American thermonuclear researchers and four of their British confreres discussed where they stood in the quest for fusion power. Secrecy limited them to a brief official statement: "Some experimental devices have, for some months, been yielding substantial numbers of neutrons from the interior gas . . . however it is a delicate and difficult matter to distinguish the neutrons produced by thermonuclear processes from those arising from other processes not of particular interest [i.e.: acceleration mechanisms]. Reports in the meeting on the temperatures reached suggest the achievement of thermonuclear neutrons, but more experimental work will be necessary to establish this as a fact."

Reading between the lines it sounds as though we have just about had an academic breakthrough—true thermonuclear production of neutrons, but for times too short and at temperatures too low to be more than a step ahead.

Single Trade Fair for 1958

Beginning in 1958, there will be but one annual atomic industry trade fair, to be called the Atomic Industrial Forum AtomFair. This represents a merger of the Forum's annual AtomFair, held in 1955 in Washington, last year in Chicago and this year in New York, and the International Atomic Exposition, sponsored by the American Institute of Chemical Engineers at Cleveland in 1955 and Philadelphia this spring. The 1958 combined trade fair will be held in Chicago, March 17–21.

Fifth A-Sub Launched

Mare Island navy yard last month launched *Sargo*, the Navy's fifth nuclear submarine and first built on the west coast. She is a sistership of *Skate*, launched in May (NU, June '57, 25) and *Swordfish*, launched in August. *Seadragon*, fourth and last of this class, is on the ways at Portsmouth, N. H., navy yard. All four have improved *Nautilus*-type Westinghouse reactors.

Biomedical Symposium at MIT

An open symposium on the use of reactors in biomedical research will be held at MIT Dec. 3, sponsored by an MIT advisory group that will encourage and control such use of the MIT reactor.

AEC Regulates Fissionable Shipments

Draft regulations to guard against accidental criticality in shipment of fissionable material, drawn up by AEC, were opened for industry comment last month (*details p. 124*).

Another Beryllium Plant Completed

Brush Beryllium Co. of Cleveland has completed and will dedicate this month a $4.5-million privately-financed plant at Elmore, Ohio, for production of beryllium metal. It will produce 20,000 lb/mo beryllium hydroxide and 10,000 lb/mo of vacuum-cast Be metal, and is the second Be plant in three months to be completed, Beryllium Corp. having finished its Ashmore, Pa., plant in August (NU, Sept. '57, 32).

AEC Studying Compact Military Reactors

Industry bids to make "preliminary studies on compact nuclear reactor systems for military use . . . in applications demanding a mobile power plant" have been invited by AEC. Requirements include low power rating, up to 2 Mw(e) net; extreme compactness, and low operating weight. Observers speculate that this may be connected with the truck-mounted reactor pictured in NU, Sept. '57, 30. Firms interested in bidding are asked to notify AEC's Schenectady Operations Office.

MIT to Get AEC Materials

Five tons of heavy water, 26 fuel elements containing ~2.5 kg U^{235}, and neutron sources will be loaned without charge by AEC for the MIT research reactor's first loading. Similar aid had been given North Carolina State, Penn State, and Michigan Univ. for their reactors.

Bendix Steps Up Nuclear Program

Bendix Aviation Corp., long flirting with atomic energy, and already working on reactor design, instrumentation and control, and manufacture of simulators and rod drives, has decided to broaden its efforts and has hired Robert J. Creagan, manager of Westinghouse's power reactor engineering department. Creagan is to find and develop nuclear products and services that Bendix can offer, such as components, instruments, or control and systems planning.

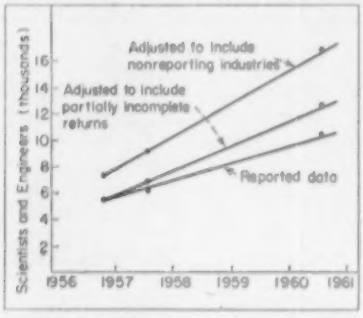
Bohr Accepts Peace Prize

Niels Bohr was awarded the first $75,000 Atoms for Peace Award at a special convocation of the National Academy of Sciences. President Eisenhower headed an international gathering to honor the godfather of the nuclear age.

Nuclear Manpower Seen Doubling by '60

The privately-supported segment of the nuclear industry will require 16,000 scientists and engineers in 1960, more than double the number employed last year. A personnel shortage, however, will not accompany this growth pattern.

This prediction, contained in the Atomic Industrial Forum's survey, "Scientific and Engineering Manpower Requirements for the Atomic Industry," is based on data gathered from 280 firms, including 49 of the 50 companies considered most active in nuclear programs. The 35-page



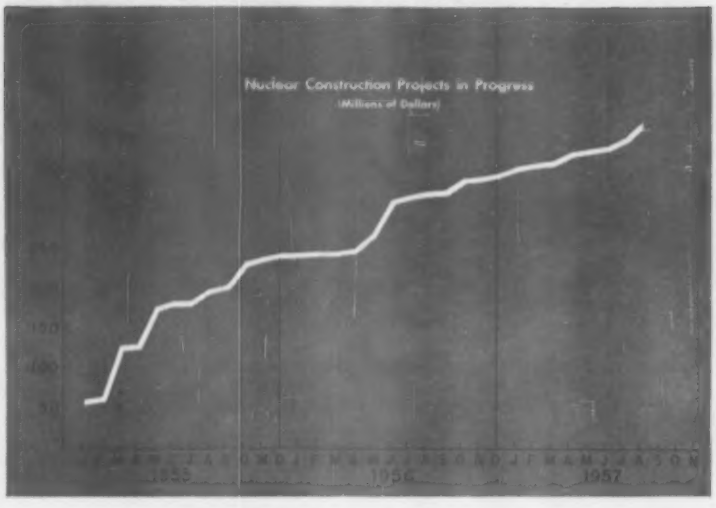
PRIVATE NUCLEAR INDUSTRY'S NEED for scientists and engineers will double in the next three years, Forum says

survey, conducted under AEC contract, also reveals these salient facts:

- About ¼ of the scientists and engineers in the field in 1956 were mechancial engineers, more than twice the number from any of the 25 other technical disciplines.
- Approximately 56% of the present total are engaged full-time on nuclear work.
- Power-reactor programs currently require the largest number of scientists and engineers, followed by nuclear fuels and reactor components.
- While 89% of the scientists and engineers in the nuclear industry have received at least a bachelor's degree, only 34% have any special nuclear training—the rest got their nuclear know-how on the job.
- Electrical equipment manufacturers employ nearly ⅛ of the nuclear scientists and engineers.

This spring, three companion manpower reports will be released: two of them by the Commission itself (on the needs of AEC and its contractors, and on the needs of other government agencies) and a third, prepared by the American Society for Engineering Education under AEC contract, on universities and nonprofit institutes.

NUCLEONICS Statistics of the Month



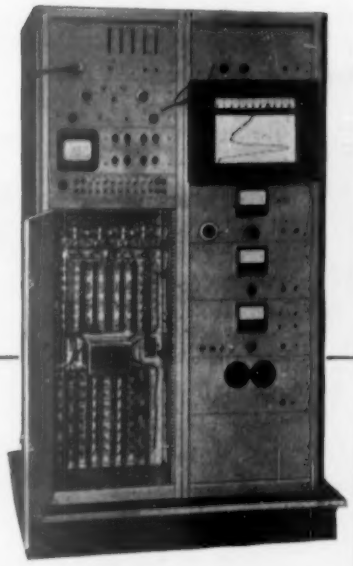
	Latest month	Month ago	Year ago
Nuclear Contracts*—			
Contracts awarded for federal projects (10^3)	10,846	3,459	1,077
Proposed construction, privately-owned (10^3)	0	0	0
Contracts awarded, private work (10^3)	1,750	4,000	0
Backlog of private projects (10^6)	227	229	167
Access Permits†—			
Access permits issued	18	27	40
Total access permit holders	1,372	1,363	1,036
Isotope Use†—			
Applications for isotope use	366	345	299
Cumulative total of isotope users	4,298	4,182	3,506
Oak Ridge National Laboratory shipments	1,106	1,142	993
Public and private export shipments	94	269	18
Employment†—			
AEC employment	6,853	6,898	6,625
Construction and design contractors' employment	12,357	12,727	14,108
Total operating contractors' employment	99,477	99,142	92,423
Production workers	50,619	50,928	50,229
Research and development employees	42,296	41,918	36,262
Miscellaneous workers	6,562	6,566	5,932
Average weekly hours worked	40.2§	41.0¶	40.9‖

	Operating	Building	Contracted
U. S.-built Reactors‡—			
Power, domestic	1	4	11
Power, for export	0	1	6
Power experiments	5	3	4
Military and naval	4	21	10
Research and test, domestic	35	21	23
Research and test, for export	5	15	5
Foreign-built Reactors‡—			
Power, domestic	4	22	14
Power, for export	0	0	2
Research and test, domestic	23	18	5
Research and test, for export	2	10	1

* From *Construction Daily*, a McGraw-Hill periodical † From AEC ‡ NUCLEONICS figures
§ Third quarter 1957 ¶ Second quarter 1957 ‖ Third quarter 1956

NUCLEAR DATA PROCESSING — FROM DETECTOR TO READOUT

Multi-Channel Analyzers

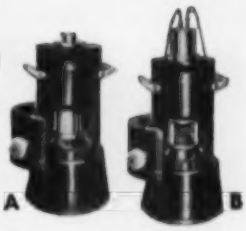


Radiation, no matter what its source, can best be analyzed by RCL's 256-channel analyzer. Speed, precision, reliability are but a few of the qualities that make RCL the leader in the spectrometry field. Also available, 1024-channel Neutron Time of Flight Analyzer. See the new RCL catalogue for more information.

Fast-Slow Neutron Survey Meter

Highest Gamma discrimination, transistorized, lighter weight, printed circuitry, log scale, and reduced power requirements are some of the features that make the RCL survey meter the most advanced meter available. See RCL's new catalogue for all of your instrument requirements.

Scintillation Detectors



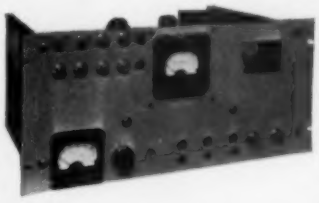
New scintillation detectors are now available from RCL. Illustrated above is the flexibility when used with RCL's new dual purpose shield. (a) with a well type crystal for test tube samples and (b) with a solid crystal for flat samples. Alpha, beta and gamma crystals available, as well as other shields and collimators. See RCL's new catalogue.

Send for the catalogue that will become a handbook for the nuclear field, containing illustrations and specifications on RCL's complete line of instruments.

One new feature is the diagrammatical listing of all components needed for typical counting situations, requirements for systems are seen and understood immediately.

No matter what your nuclear data processing requirements, RCL can supply the proper component or system, from detector to readout.

Reactor Controls

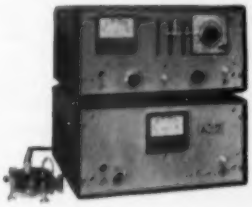


The Composite Safety Amplifier illustrated above is only one of the many reactor control instruments manufactured by RCL. The high quality and reliability that is mandatory with these items is guaranteed by RCL.

Sensing Elements

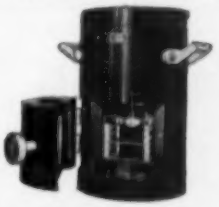
The Mica Window Counter above is representative of the most complete line of sensing elements available in the nuclear field today. Scintillation detectors, GM counters, fast and slow neutron detectors, ion chambers, and flow counters are outlined in RCL's new 132-page catalogue, available immediately. Use the coupon below to send for yours today.

Scalers and Proportional Counting Systems



The system shown above is a complete gross counting system for alpha, beta and gamma radiations. It consists of a decade scaler, a high voltage supply with pulse amplifier, and a preflush flow detector. Operates with GM, scintillation and proportional detectors.

Counting Room Accessories



This Vertical Iron Shield is representative of RCL's complete line of counting room accessories. Other shields, safety devices, sample handling items and accessories demonstrate RCL's complete line of nuclear equipment and instruments. Send for RCL's new catalogue for a complete list of products.

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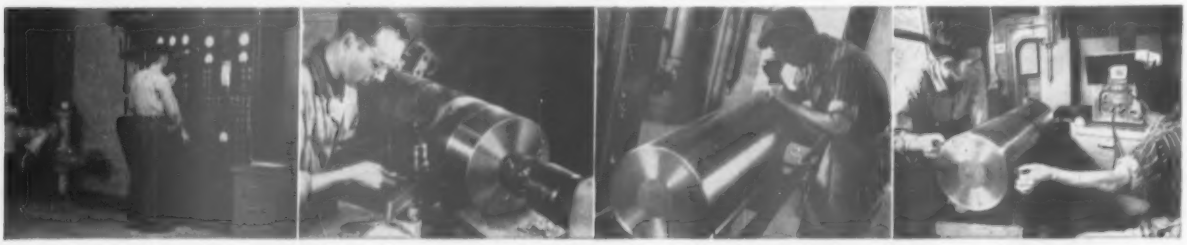
Ask to be placed on the mailing list of "More ZR Facts," the zirconium industry's first continuing source of technical information.



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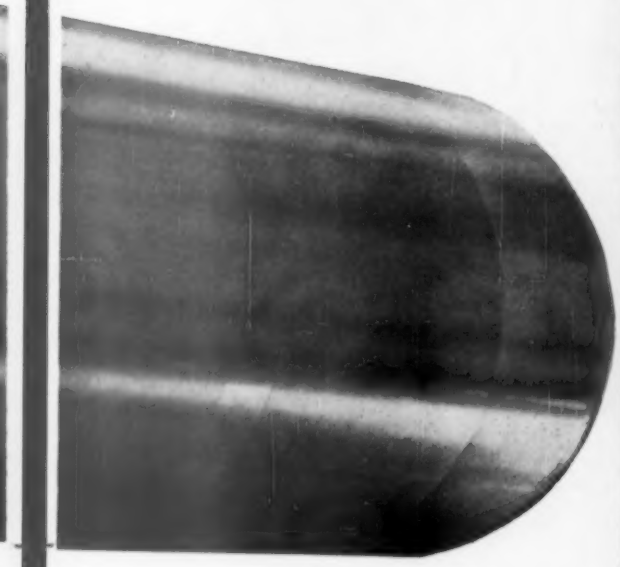
● Operator mechanically conditions zirconium ingot to remove surface irregularities from cast ingot wall.

● Brinnel hardness test taken at as many as ten intervals along ingot to assure uniform mechanical properties.

● Testing ingot soundness with Ultrasonic Reflectoscope to inspect for internal porosity and irregularities.

SECOND MELT certified ingot ready for fabrication. Ingots are produced from 500 to 2500 lbs. each in 12″ to 16″ diameters. From zircon sand to zirconium ingot by *one* manufacturer—quality controlled all-the-way with Proven Methods, Proven Quality and Proven Performance.



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Akron, New York, U.S.A.
Division of THE CARBORUNDUM COMPANY

Production Pioneer of ZIRCONIUM

HIGH VACUUM COMPONENTS, EQUIPMENT, and SYSTEMS

Mechanical Vacuum Pumps

NRC Model 100M

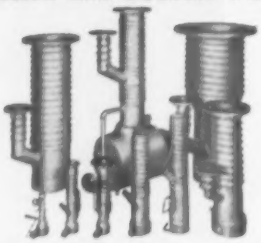
Because of the Gas Ballast feature, these pumps maintain their original high efficiency even when pumping 100% water, or other condensable vapors. Therefore, expensive oil purifiers and frequent and costly oil changes are not needed. NRC pumps have paid for themselves in three years from oil savings alone.

Model	Capacity CFM	Ultimate Vacuum Gas Ballast Off mm. Hg (A)	Ultimate Vacuum Gas Ballast On mm. Hg (A)	Price (B)
SINGLE STAGE				
2-S	1.25	3×10^{-3}	Less than one half millimeter of mercury	$155
4-S	3.3	3×10^{-3}		225
6-S	6.75	3×10^{-3}		315
15-S	11.6	3×10^{-2}		475
30-S	29.5	3×10^{-3}		800
100-S	100	3×10^{-3}		1500
200-S	202	1×10^{-2}		2500
400-S	403	5×10^{-3}		4000
DOUBLE STAGE				
2D	1.25	5×10^{-5}	2.5×10^{-2}	$215
4D	3.3	5×10^{-5}	2.5×10^{-2}	280
6D	6.75	5×10^{-5}	2.5×10^{-2}	425
15D	14.75		2.5×10^{-2}	750
30M	29.5	3×10^{-3}	3×10^{-3}	1300
100M	100	3×10^{-3}	3×10^{-3}	2150
200M	202	3×10^{-3}	3×10^{-3}	3500
400M	403	3×10^{-3}	3×10^{-3}	5900

Note A: McLeod gauge reading

Note B: F.O.B. Newton, Mass. Price includes pump, base, v-belt drive, and motor

Diffusion and Booster Pumps



NRC Booster and Diffusion Pumps

While NRC high vacuum diffusion and booster pumps are unsurpassed for through-put, blank off, and forepressure tolerance, they are especially outstanding for reliability. They offer long, trouble-free life, and are easy to maintain. Narcoil pumping fluids are unusually stable, have excellent pumping characteristics, and are low-priced. Narcoil-10 is $10.50 per gallon and Narcoil-40 is $38.50 per gallon.

Model	Blank-Off, mm. Hg (C)	Max. Speed Liters/Sec.	Tolerable Forepressure mm. Hg	Pumping Fluid	Price (D)
DIFFUSION PUMPS					
G-2-M (A)	8×10^{-7}	30	0.50	Mercury	$225
H-2-P	2×10^{-7}	80	0.25	Narcoil 40	125
A-2-P (B)	2×10^{-6}	85	0.20	DC 703	165
H-4-P	5×10^{-7}	300	0.31	Narcoil 40	235
H-6-P	5×10^{-7}	730	0.20	Narcoil 40	410
H-10-P	5×10^{-7}	1900	0.19	Narcoil 40	820
H-16-P	5×10^{-7}	5500	0.30	Narcoil 40	1450
BOOSTER PUMPS					
B-1	1×10^{-4}	8	0.30	Narcoil 10	$ 70
B-2	1×10^{-4}	85	0.85	Narcoil 10	205
B-4	1×10^{-4}	260	1.30	Narcoil 10	360
B-6	1×10^{-4}	530	0.90	Narcoil 10	1090
B-12	1×10^{-4}	3500	0.90	Narcoil 10	2250

Note A: Glass pump

Note B: Air-cooled. Price includes blower

Note C: Untrapped ion gauge, except for G-2-M

Note D: Includes initial charge of pumping fluid

Vacuum Gages

NRC Model 520

NRC vacuum gauges are outstanding for their accuracy and ability to withstand hard usage. The NRC Model 520 shown above is an all-purpose gauge with uniquely wide range and accuracy. Its ruggedized new circuitry eliminates troublesome components, minimizes contamination effects and provides highly stable linear amplification.

Model	Type	Range mm. Hg	Price complete with head(s)
NRC HIGH VACUUM GAUGES			
501	Thermocouple Head	10^{-3} to 1.0	$11.00
507	Ionization Head	2×10^{-8} to 5×10^{-3}	24.00
510	Alphatron® Ionization	10^{-3} to 10.	545.00
515	Logarithmic Alphatron® Ionization	10^{-3} to 10.	275.00
516	Pirani	10^{-3} to 1.0	175.00
520	Alphatron® Ionization	10^{-4} to 10^{3}	575.00
701	Thermocouple	10^{-3} to 1.0	120.00
710	Thermocouple Ionization	2×10^{-8} to 1.0	481.00

NRC HIGH VACUUM SYSTEMS

Write us about your problem if you are seeking ways to improve your product quality and cut costs.

As one of the pioneers and leaders in the design and manufacture of many kinds of high vacuum systems, NRC Equipment also can supply standard and specially engineered equipment such as:

Vacuum Furnaces, Vacuum Coaters

Freeze Driers, Impregnators, Vacuum Driers

Vacuum Analytical Equipment (for measuring gas content of metals)

Specially engineered vacuum systems

Leak detection apparatus

NRC EQUIPMENT CORPORATION

A SUBSIDIARY OF

NATIONAL RESEARCH CORPORATION

87 Charlemont St., Newton Highlands 61, Mass.

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FOR SALE

Commercial-grade zirconium sponge

(hafnium-containing)

Commercial-grade zirconium is now for sale in tonnage quantities — from Columbia-National in sponge form or as rod, sheet and tubing from the country's leading mills.

You can put commercial-grade zirconium to work:

- To combat severe corrosion in the process industries.
- For prototype or experimental work in the nuclear energy field.

To help you investigate and use zirconium, Columbia-National offers experienced technical assistance on melting, fabricating and alloying.

New Technical Digest now ready! Write for data on properties and applications of commercial-grade zirconium.

NEW METALS FOR INDUSTRY

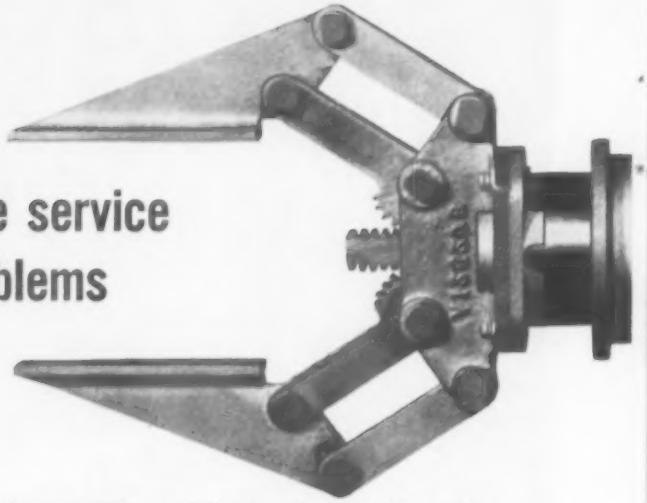
Columbia-National Corporation

Jointly owned by Columbia-Southern Chemical Corporation and National Research Corporation

Dept. C 4-F — 70 Memorial Drive, Cambridge, Mass.

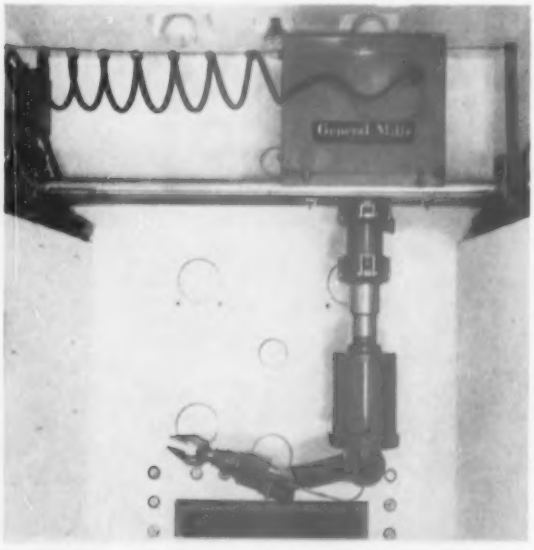
See us at the Chemical Show, Dec. 2-6, Booth No. 1044

Now - an even more complete service on your remote handling problems



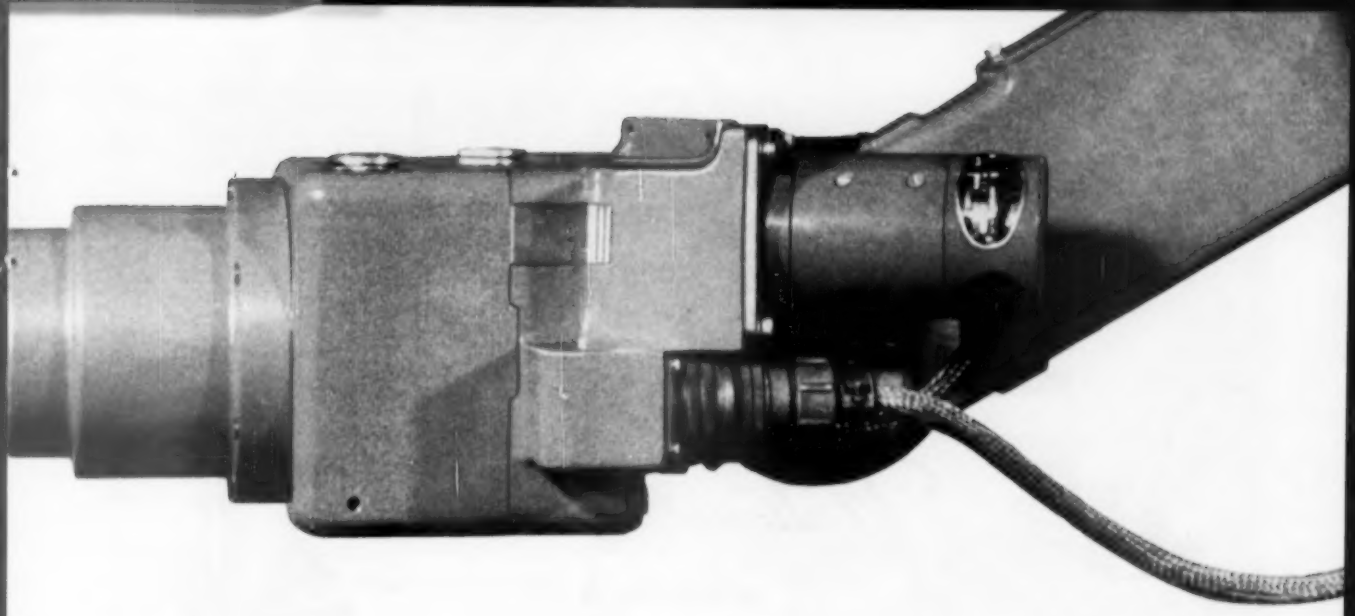
General Mills, an old hand with nearly a decade of experience in developing and manufacturing nuclear handling equipment, has formed a new department in order to more efficiently serve the atomic industry. All functions—research and development, production engineering, production, sales and service—have been combined in a virtually independent group within our Mechanical Division. It will be known as the Nuclear Equipment Department.

This expanded department will offer a more complete service in all phases of nuclear handling equipment. The specialized engineering know-how that developed the General Mills Mechanical Arm and many special purpose devices is at your service. Standard equipment includes the Mechanical Arm in several versions including heavy duty and underwater models, crane hoists, and a line of remotely interchangeable tools for the Arm. Special devices made in the past or now in development include mobile remote handling units, boom mounted manipulators, control rod drive mechanisms, underwater saws, tunnel conveyors and other custom designs.

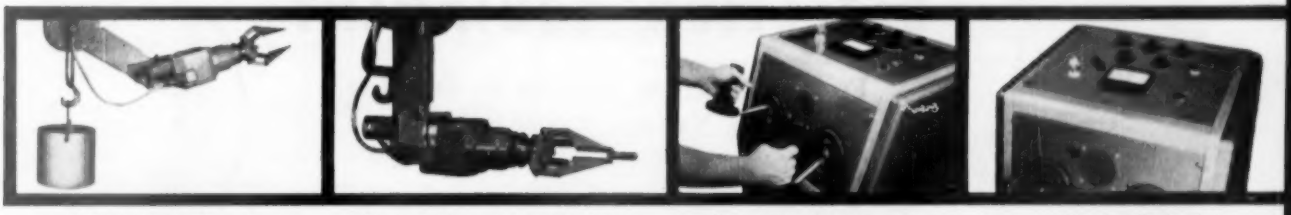


DO YOU NEED STANDARD OR CUSTOM DESIGNED EQUIPMENT?
This is a standard model in our regular line of handling equipment, shown in a normal hot cell installation. Our Nuclear Equipment Department also designs and builds special equipment for unusual situations. Whether your requirement is a standard Mechanical Arm or a special device—or if you are wondering which—contact our Nuclear Equipment Department for more facts.

TECHNICAL SERVICE MAY SAVE YOU MONEY
Here two members of our staff use a model Mechanical Arm to discuss handling of radioactive materials with a customer. As veterans in this young and growing business, we have gathered a vast amount of technical, design and production know-how. It is available to you. Consultation during the early planning stages of your installation is best. But feel free to contact our Nuclear Equipment Department at any time.



THE GENERAL MILLS **MECHANICAL ARM** IS THE ONLY REMOTE-CONTROL MANIPULATOR TO GIVE YOU **ALL** THESE FEATURES:

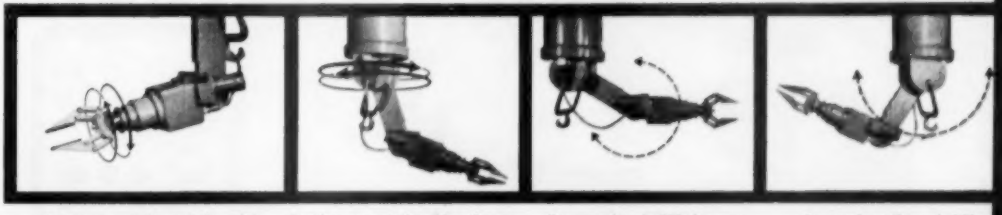


Lift capacity of 750 pounds

Fine control for precision manipulations

Natural controls cut operator training time

Visual-audio signals to indicate grip force

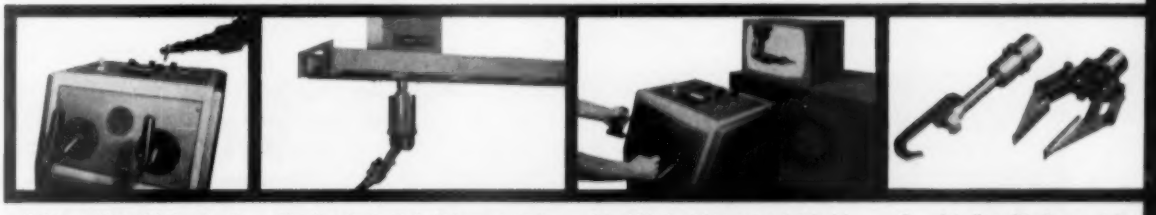


Continuous right or left wrist rotation

Continuous rotation of entire arm

Forearm bends 220 degrees

Arm swings through 180 degree arc



Holds position with hands off controls

Simple electronical linkage permits mounting on crane or vehicle for complete mobility

Adaptable to telescope and television viewing for "limitless" reach

Complete line of tools, remotely interchangeable

FOR MORE FACTS AND TECHNICAL BULLETIN
write, wire or phone our Nuclear Equipment Department at
1620 Central Avenue, Minneapolis 13, Minnesota.
The phone is STerling 9-8811.

MECHANICAL DIVISION

Creative Research and Development + Precision Engineering and Production

General Mills

BETA PARTICLE
CRYSTAL DETECTORS

ALPHA PARTICLE
CRYSTAL DETECTORS

NEW 1" DIAMETER
COMPLETE SCINTILLATION
COUNTER HEAD

National Radiac

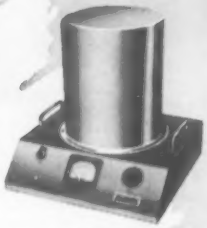
presents a

COMPLETE SPECTRUM

of

DETECTION EQUIPMENT

FAST AND SLOW NEUTRON
DETECTOR AND X-RAY
AND PROTON DETECTOR



FAST NEUTRON
SURVEY METER

SODIUM IODIDE (TI)
WELL TYPE CRYSTALS
and other sizes

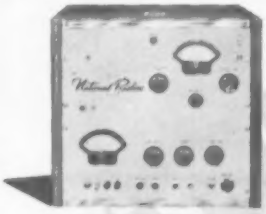
From Scintillation Crystals to Complete Systems, National Radiac offers an entirely specialized production service superior in scope, depth and pioneering skill.

5" AERIAL
SCINTILLATION HEADS

SINTILON BRAND
PLASTIC PHOSPHORS

Note: Improved Sintilon Brand Plastic Phosphors Now Have a Relative Light Yield to Betas of 70% the Light Yield of Anthracene.

2" SCINTILLATION
HEADS



POWER SUPPLY AND
COUNT RATE INDICATOR

National Radiac is the leading grower of scintillation crystals of all types. These crystals include: Stilbene, anthracene of the organic type; sodium iodide thallium activated of the inorganic type. The highly efficient sintilon brand plastic phosphor is also produced by National Radiac.

Personalized consulting service is available for any crystal, nuclear electronic or system problem.

- *For complete details about your detection requirements, write for free literature and specifications to Dept. N-1*

National Radiac INC. 475 Washington St., Newark 2, New Jersey

FOR THE NUCLEAR PROGRAM

Several divisions of the Norton Company are making important contributions to the field of nuclear energy. Some of the products that are proving helpful in furthering progress in nuclear energy are:

- **Ceramic fuel units, from sample lots to full core loadings.**
- **Reactor shield and control rod materials, particularly boron carbide, in a wide range of special shapes.**
- **Metallurgical refractories for processing and reprocessing nuclear fuel materials and other unusual alloys and metals.**
- **Source or intermediate materials, such as oxides or carbides, for use in producing zirconium and other materials for reactor construction.**
- **Diamond cut-off wheels for dicing or wafering — that eliminate waste and assure dimensional accuracy of the costly materials being cut.**

The Norton organization includes an engineering staff experienced in atomic development — available for cooperation where electric furnace products may be of interest. Facilities are available for the production of, or research in, classified items. For further facts, write to NORTON COMPANY, 660 New Bond Street, Worcester 6, Mass.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

Ceramic Fuel Pellets For Nuclear Reactors. Those illustrated are of a thorium-uranium oxide mixture. They are typical of the ceramic fuel element components available in a wide range of compositions made to exact specifications.

These Reactor Parts Are Made Of Boron Carbide, known as NORBIDE* — a hard, stable, lightweight material. They absorb neutrons without becoming radioactive. Besides the shields and other structural parts shown, Norton boron carbide may be molded into control rods, tubes, discs, segments, etc.

NORTON
REFRACTORIES

Engineered... Rx ...Prescribed

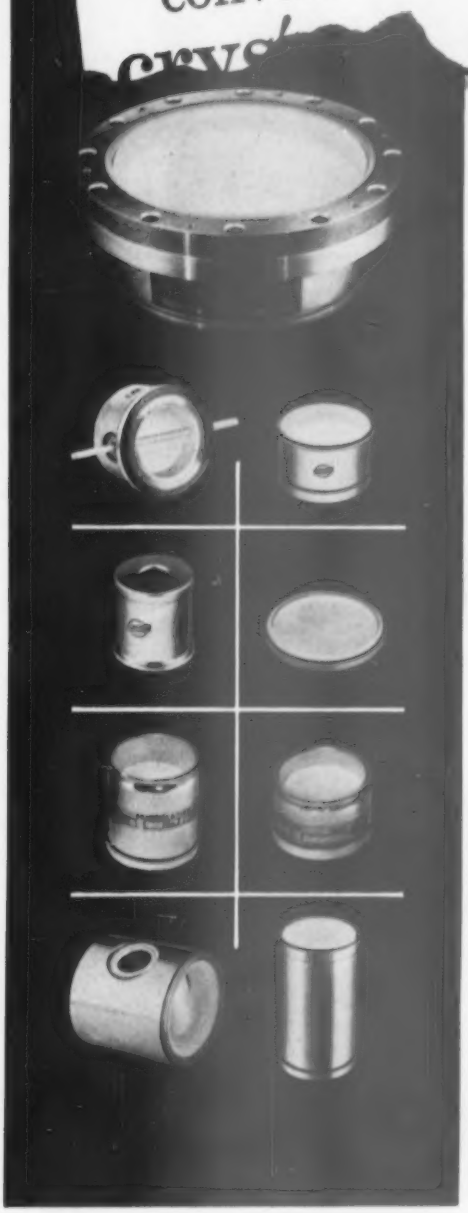
Making better products...
to make your products better

NORTON PRODUCTS
Abrasives • Grinding Wheels
Grinding Machines • Refractories

BEHR-MANNING DIVISION
Coated Abrasives • Sharpening Stones • Behr-cat Tapes

High Purity Refractories Vital To Metallurgy include crucibles, made of MAGNORITE* pure magnesia, zirconia and thoria, suitable for melting uranium, plutonium, thorium, etc. A special Norton laboratory devoted exclusively to nuclear problems is developing other unique ceramics for the atomic program.

crys'-tals, (Scintillation), *syn.*
1. "Harshaw Quality" inherent in each Harshaw-made crystal. 2. No ultra violet light absorbing impurities. 3. Highest light transmission. 4. Maximum energy conversion efficiency.



Harshaw Sodium Iodide (Thallium) Scintillation Crystals for gamma radiation detection instruments

"Harshaw Quality" . . .
inherent in each Harshaw-made crystal

The high purity, clarity, and proper activation of Harshaw Crystals are a natural result of our long pioneering experience in the delicate art of crystal growing.

Harshaw Purity means light absorbing impurities are reduced to infinitesimal traces.

Harshaw Clarity gives highest possible transmission of the crystal's own emitted light.

Harshaw Activation means the optimum thallium concentration ensuring maximum energy conversion.

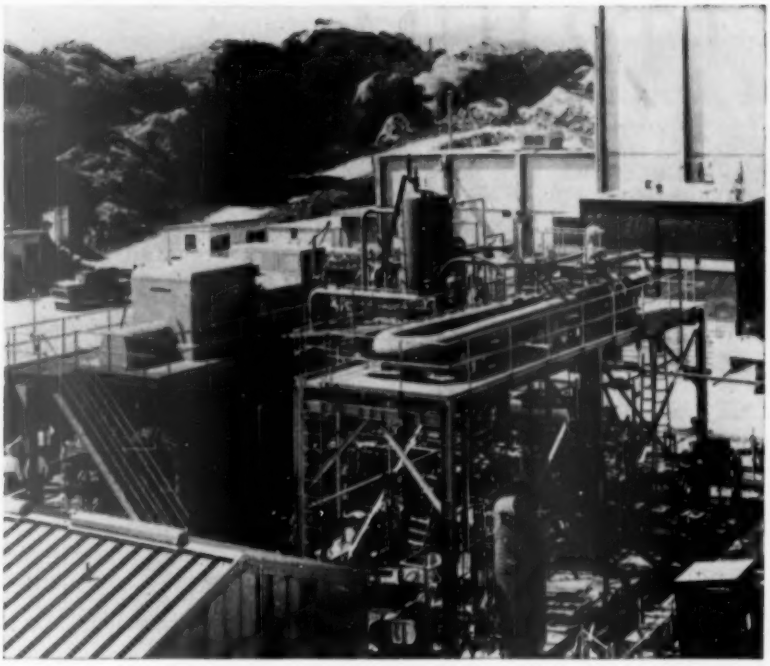
Our crystals are normally supplied hermetically sealed in aluminum containers engineered to secure maximum light collection. We will custom design these units to fit your specific requirements. Harshaw crystals are currently used in nuclear physics research, well logging, uranium prospecting, medical research, and industrial process and product control.

No need to specify "Harshaw Quality" . . . you get it automatically when you order Harshaw Crystals. We encourage requests for technical assistance. Prices, specifications, or other information will be sent in answer to your inquiry.

HARSHAW

OTHER HARSHAW SCINTILLATION CRYSTALS AVAILABLE IN THE FOLLOWING FORMS:
Potassium Iodide (Tl) • Cesium Iodide (Tl) • Cesium Bromide (Tl)
Anthracene • Stilbene • Naphthalene
Lithium Iodide (Eu) for neutron detection • Sodium Iodide (rough cut blanks)

THE HARSHAW CHEMICAL CO.
1945 EAST 97TH STREET • CLEVELAND 6, OHIO



Official U. S. Navy photo

FIRST ATOMIC SUB. TUBE-TURN stainless steel fittings were used in the Nautilus (above) . . . in the Skipjack, fastest sub built to date . . . and the two-reactor Triton, world's largest sub.

PIPING AID, supplied by Tube Turns, includes technical information on a wide variety of subjects to simplify your design work on piping systems.

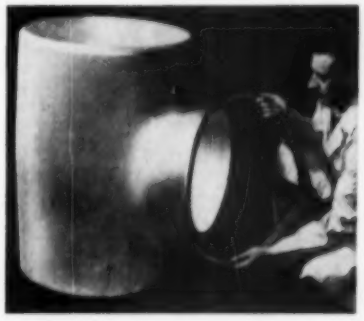
First sodium graphite reactor powers utility plant

Because of temperature and corrosion conditions involved, stainless steel piping and butt-welded fittings were specified on the reactor coolant system of the Sodium Reactor Experiment, designed and built for the AEC by Atomics International, a division of North American Aviation, Inc. Reactor heat is used by Southern California Edison Company to produce power. TUBE-TURN* stainless steel welding elbows, tees, reducers and flanges were used at critical points throughout the sodium coolant piping system.

Here is another example of Tube Turns' pioneering work on A-power projects. These plants involve all types of reactors, all phases of the piping, all sizes of piping and types of materials.

When you plan piping and need technical help, take advantage of Tube Turns' broad experience in *all* fields. Call us! No obligation.

*"TUBE-TURN" and "tt" Reg. U. S. Pat. Off.



LARGEST. For the new research reactor at Oak Ridge, Tube Turns produced the largest aluminum pipe fittings ever forged, including 36" reducers and 24" elbows, returns and tees with .562" walls.

TUBE TURNS

A DIVISION OF NATIONAL CYLINDER GAS COMPANY

Louisville 1, Kentucky

tt TUBE-TURN

The Leading Manufacturer of Welding Fittings and Flanges

YTTRIUM

Availability of high purity yttrium and rare earth oxides

A report by LINDSAY

Only three years ago, most high purity rare earths were little more than laboratory curiosities.

Today they are extensively used for an amazing variety of chemical and industrial applications.

What happened? Lindsay technicians pioneered the first commercially installed ion exchange unit for the production of separated rare earths. The process was patterned after techniques developed by Doctors Spedding and Powell of the Institute for Atomic Research at Ames, Iowa.

Lindsay's pilot plant rare earth ion exchange installation had 40 six-inch columns. This unit made purified rare earths available to industry for the first time in practical, even though still limited, quantities.

The response from industry was so enthusiastic, we were forced to expand our ion exchange facilities rapidly. Today we have in continuous operation more than 100 columns with large production units of eighteen-inch and sixty-inch diameters.

With our larger production facilities, we are now making prompt shipments of high purity yttrium and rare earth oxides in quantities from a gram to hundreds of pounds.

TYPICAL MAXIMUM IMPURITIES IN LINDSAY PURIFIED RARE EARTH AND YTTRIUM OXIDES

ATOMIC NO.	OXIDE	CODE	PURITY	% RARE EARTH MAXIMUM IMPURITIES AS OXIDES
57	La_2O_3. LANTHANUM OXIDE	528 529	99.99 99.997	0.01 Pr, 0.001 Ce. 0.0025 Pr, 0.0005 others
58	CeO_2. CERIC OXIDE	215 216	99.8 99.9	0.2 (largely La + Pr + Nd). 0.1 (largely La + Pr + Nd).
59	Pr_6O_{11}. PRASEODYMIUM OXIDE	726 729.9	99 99.9	1 La + Nd + smaller amounts of Ce and Sm. 0.1 Ce + Nd.
60	Nd_2O_3. NEODYMIUM OXIDE	628 629 629.9	95 99 99.9	1-4 Pr, 1-4 Sm, 0.5-1 others. 0.1-0.4 Pr + 0.1-0.4 Sm + 0.5 others. 0.1 (largely Pr + Sm).
62	Sm_2O_3. SAMARIUM OXIDE	822 823	99 99.9	0.2-0.7 Gd, 0.2-0.6 Eu, and smaller amounts of others. 0.1 (largely Nd + Gd + Eu).
63	Eu_2O_3. EUROPIUM OXIDE	1012 1011	98-99 99.8	1-2 Sm + smaller amounts of Nd + Gd + others. 0.2 (largely Sm + Gd + Nd).
64	Gd_2O_3. GADOLINIUM OXIDE	928.9 929.9	99 99.9	1 Sm + Eu + trace Tb. 0.1 Sm + Eu + trace Tb.
65	Tb_4O_7. TERBIUM OXIDE	1803 1805	99 99.9	1 Gd + Dy + Y. 0.1 Gd + Dy + Y.
66	Dy_2O_3. DYSPROSIUM OXIDE	1703 1705	99 99.9	1 (largely Ho + Y + Tb + small amounts of others). 0.1 Ho + Y + traces of others.
67	Ho_2O_3. HOLMIUM OXIDE	1603 1605	99 99.9	1 (largely Er + Dy + small amounts of others). 0.1 Er + Dy + traces of others.
68	Er_2O_3. ERBIUM OXIDE	1303 1305	99 99.9	1 Ho + Dy + traces Yb and Y. 0.1 Ho + Tm.
69	Tm_2O_3. THULIUM OXIDE	1405 1403	99.9 99	0.1 Er + Yb + trace Lu. 1 Er + Yb + trace Lu
70	Yb_2O_3. YTTERBIUM OXIDE	1201 1202	99 99.9	1 Er + Tm + trace Lu. 0.1 Tm + trace Lu + Er.
71	Lu_2O_3. LUTETIUM OXIDE	1503 1505	99 99.9	1 Yb + Tm + traces of others. 0.1 Yb + Tm + traces of others
39	Y_2O_3. YTTRIUM OXIDE	1112 1115 1116	99 99.9 99.9+	1 Dy + Gd + traces Tb and others. 0.1 Dy + Gd + traces Tb Approx. 0.05 Dy + Gd.

COSTS GREATLY REDUCED

Of course, as production of purified rare earths increased, costs came down. For example, only three years ago Terbium Oxide cost $500 a gram. Today you can obtain moderate size lots at less than $3 a gram.

Now that you know these high purity oxides are so readily available and the cost so remarkably low, what are *you* waiting for?

Rare earths, in purities up to 99.99%, have captured the interest and imagination of scientists in many industries as valuable new tools for the improvement of processes and products.

Your research, product development and production people should investigate the possibilities of these materials. Our bulletin "Purified Rare Earth and Yttrium Oxides" will give you detailed information and prices.

LINDSAY CHEMICAL COMPANY

272 ANN STREET • WEST CHICAGO, ILLINOIS

it's Kepco

Add in Performance, Reliability and Quality

FOR VOLTAGE REGULATED POWER SUPPLIES

KR SERIES

MODEL KR-16MC

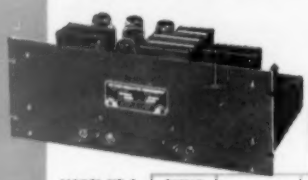
1.5 Amp. KR SERIES

OUTPUT VOLTS DC	6.3V AC	Model	Rack Mount W	H	D	Price
0-150	Each supply	KR16	19"	12¼"	17"	$625
100-200	has two	KR17	19"	12¼"	17"	$625
195-325	15 Amp.	KR18	19"	12¼"	17"	$695
295-450	outputs	KR19	19"	12¼"	17"	$695

MODEL KR-8M

600 ma. KR SERIES

OUTPUT VOLTS DC	6.3V AC	Model	Rack Mount W	H	D	Price
0-150	Each supply	KR 8	19"	10½"	13"	$330
100-200	has two	KR 5	19"	10½"	13"	$240
195-325	10 Amp.	KR 6	19"	10½"	13"	$240
295-450	outputs	KR 7	19"	10½"	13"	$250



MODEL KR-4

300 ma. KR SERIES

OUTPUT VOLTS DC	6.3V AC	Model	Rack Mount W	H	D	Price
0-150	Each supply	KR 12	19"	7"	11"	$270
100-200	has two	KR 3	19"	7"	11"	$180
195-325	5 Amp.	KR 4	19"	7"	11"	$180
295-450	outputs	KR 10	19"	7"	11"	$190

MODEL KR-1C

125 ma. KR SERIES

OUTPUT VOLTS DC	6.3V AC	Model	Rack Mount W	H	D	Price
0-150	Each supply	KR 11	19"	7"	11"	$180
100-200	has one	KR 1	19"	7"	7½"	$ 99
195-325	3 Amp.	KR 2	19"	7"	7½"	$ 99
295-450	output	KR 9	19"	7"	7½"	$ 97

To include 3" Current and Voltage Meters, Add M to Model number (e.g. KR 16 M) and Add $30.00 to the Price.
To include Dust Cover and Handles for Table Mounting, Add C to Model number (e.g. KR16 C) and Add $10.00 to the Price.
To include Meters, Dust Cover and Handles, Add MC to Model number (e.g. KR 16 MC) and Add $40.00 to the Price.

PRICES F.O.B. Flushing.

★ *FAST* RECOVERY TIME ★ *GOOD* STABILITY ★ *LOW* OUTPUT IMPEDANCE

Kepco KR Voltage Regulated Power Supplies are conservatively rated and are designed for continuous duty at 50°C ambient.

REGULATION: Less than 0.2 volts for line fluctuation from 105-125 volts and less than 0.2 volts for load variation from 0 to maximum current.

RIPPLE: Less than 3 mv. rms.

STABILITY: The output voltage variation is less than the regulation specification for a period of 8 hours.

RECOVERY TIME: Less than 50 microseconds. The excursion in the output voltage during the recovery period is less than the regulation specification.

OUTPUT IMPEDANCE: Less than 0.1 ohms from 20 cycles to 100KC. Less than 0.5 ohms from DC to 20 cycles. Many units have very much lower output impedance.

featuring

- Fast recovery time, suitable for square wave pulsed loading.
- Voltage range continuously variable without switching.
- Either positive or negative may be grounded.
- Advanced vacuum tube regulator circuitry.
- Power requirements 105-125 volts, 50-65 cycles.
- Locking type voltage control AC, DC switches, fuses, and pilot lights.
- Terminations on rear of unit.
- Oil filled condensers.
- Color Grey Hammertone.
- Guarantee one year.

All models available for 400 cycle operation on special order.

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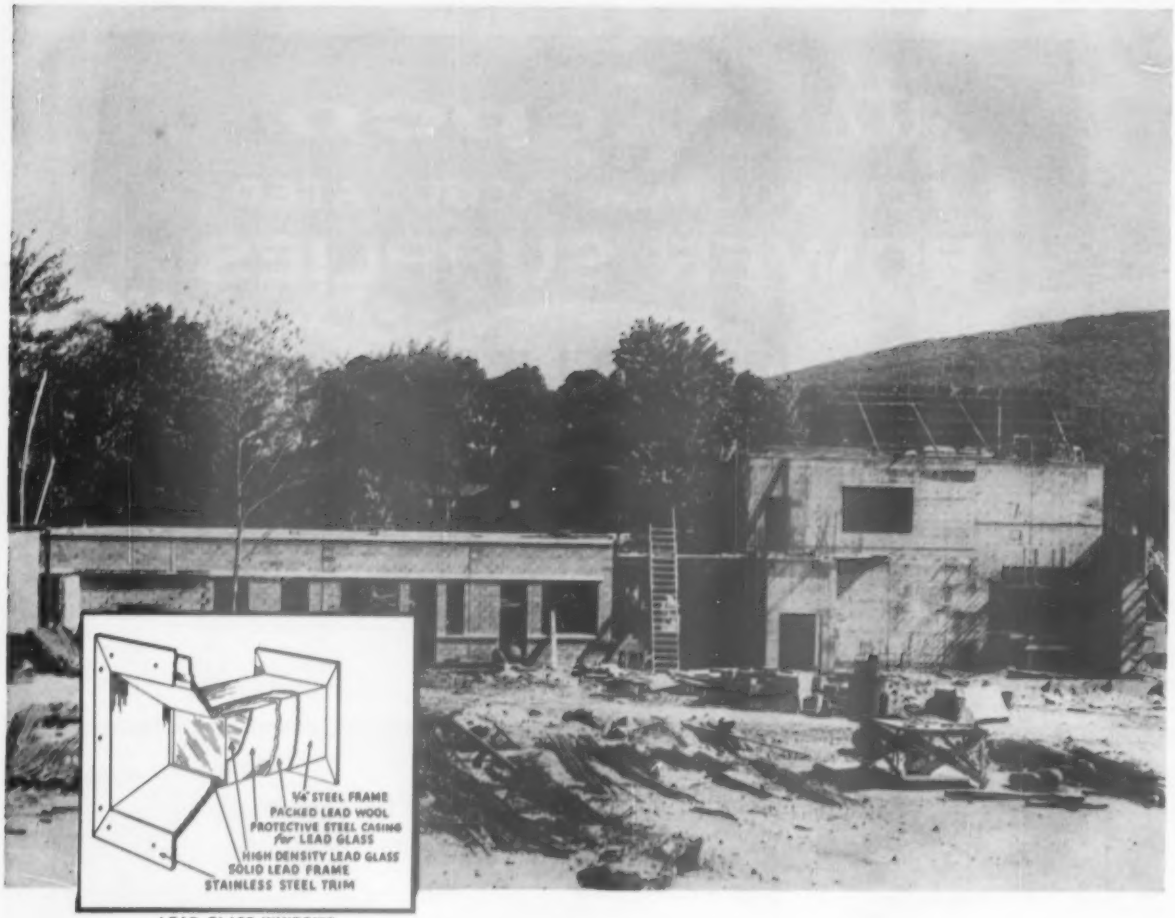

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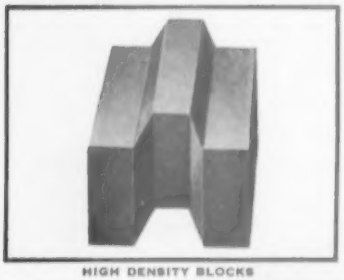

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These include shielded hoods and accessories; manipulators; electrically operated sample turntable; periscopes; electrically-operated, concrete-filled plug door; electrically operated monorail systems; access plugs and sleeves; isotope storage vaults; electrically operated, water-cooled isotope well; sleeves for pneumatic tube system; lead-lined doors and frames; and lead glass windows.

Whatever your own project requires . . . protective materials, devices or accessories . . . call Ameray's experienced engineers and scientists. They will work out conclusions for you that will be efficient and reasonable.

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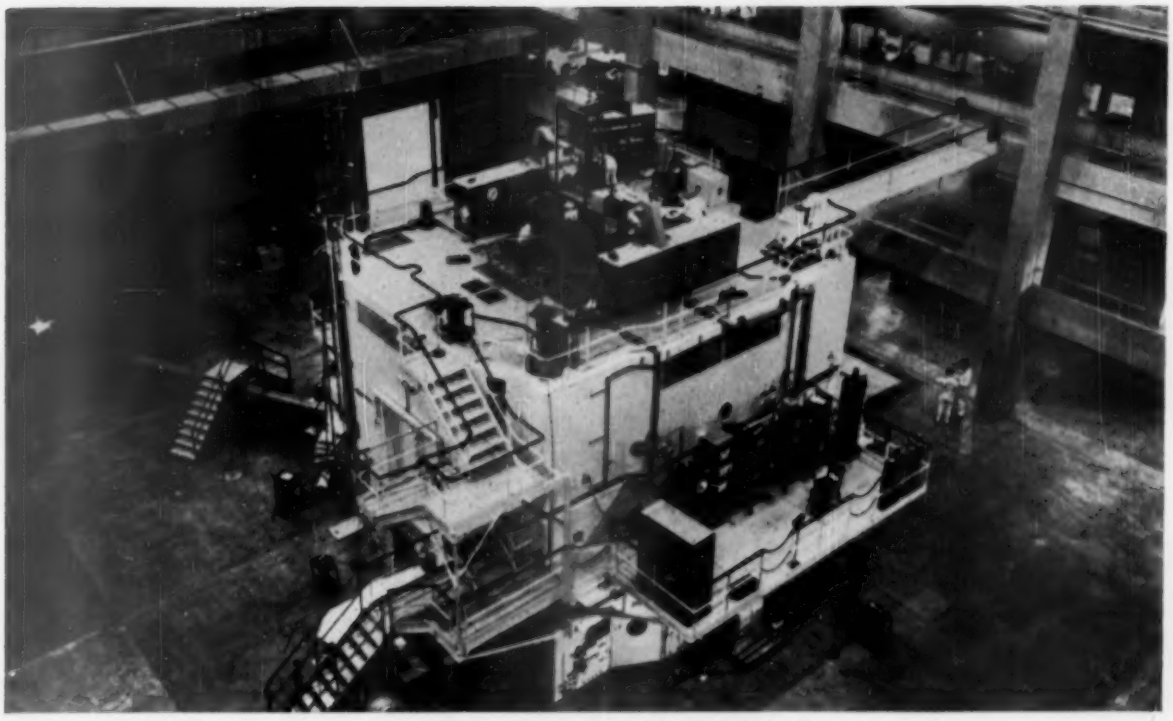


World's FIRST testing reactor—the Atomic Energy Commission's materials testing reactor at Idaho Falls, Idaho. Blaw-Knox served as architect-engineer. Neutron "chopper" tube is on main floor, left; control room is at end of bridge, upper right.

Blaw-Knox engineers two firsts in Atomic Testing Reactors

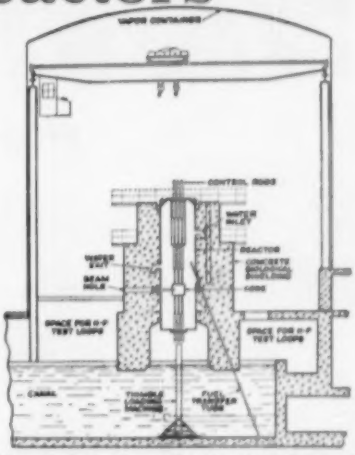
The need for testing reactors is so great that the Atomic Energy Commission has announced a new testing reactor policy, which encourages the building of testing reactors by private industry. As AEC states: ". . . a large part of its (the Commission's) requirements for test reactor facilities can be met with privately-owned reactors based on proved designs and technology."

Blaw-Knox has played a prominent role in developing this technology. Our experience includes serving as architect and engineers on:
. . . the world's *first* materials testing reactor for the AEC
. . . the world's *first* testing reactor for commercial use

With this background we are well prepared to serve you in—

- scoping the project
- preparing feasibility reports
- summarizing hazards reports
- detailing engineering
- procurement and fabrication of parts
- construction of the facility
- initial operation
- training of operators

We welcome the opportunity to work with you on any proposed project in this active field of nucleonics.



Sectional view of privately-owned testing reactor, engineered by Blaw-Knox, shows general assembly, control rods and pressure vessel.

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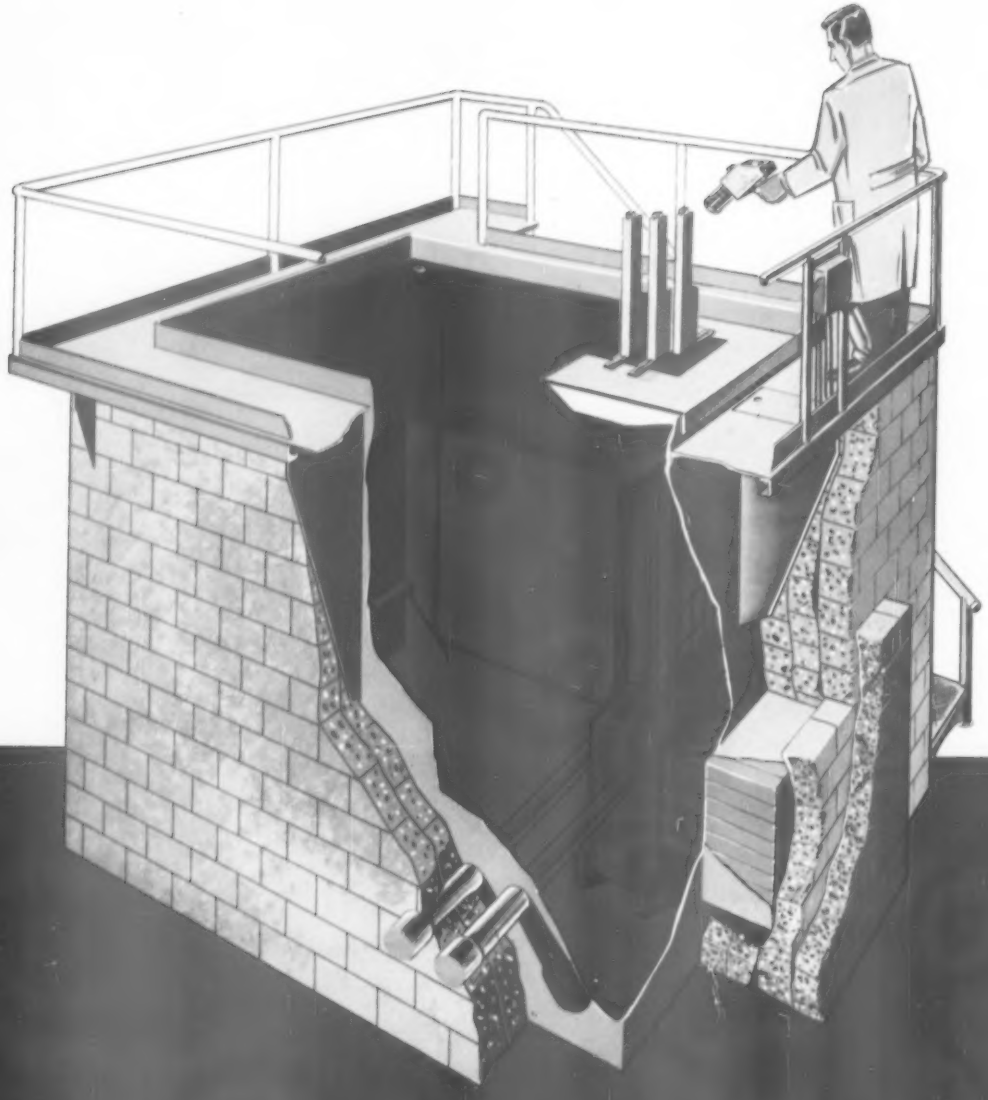

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POOL TRAIN

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THE ACF POOL TRAINING REACTOR is a portable, low pow
designed for educational and industrial applications. It is inh
in both construction and operation and it includes the basic reactor operating p
be used either to train students or operators in the uses of a reactor and its tec
requires only standard laboratory utilities and can be installed in existing build
A 40 ft. x 40 ft. floor area will provide ample space for its operation.

1. **BIOLOGICAL SHIELD**—For economy and simplicity of construction, the shield consists of ordinary concrete blocks and light water.
2. **REACTOR TANK**—The carbon steel tank is self-supporting. It includes stairs and observation walkway and is shipped assembled to the site.
3. **FUEL LATTICE**—The lattice can be a fixed or variable configuration depending upon the application. It is formed of 3" x 3" fuel assemblies.
4. **CONTROL SYSTEM**—The control system incorporates the components used on higher powered reactors. The control console may be located independently of the reactor at any convenient location.
5. **THERMAL COLUMN**—The thermal column presents a face area 2.5 ft. x 2.5 ft. providing a large space for conducting experiments that require thermal neutron radiation.
6. **THRU TUBE**—One 4" thru tube adjacent to the front face of the core lattice provides a dry irradiation space for flow-type experiments.
7. **WATER TREATMENT**—A water treatment loop is included to maintain water purity and prevent corrosion.
8. **BEAM TUBE**—Two 4" beam tubes provide dry irradiation space near the high flux region.

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is inherently safe and simple
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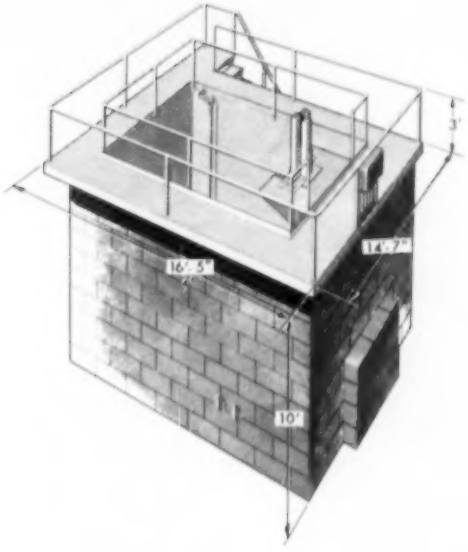
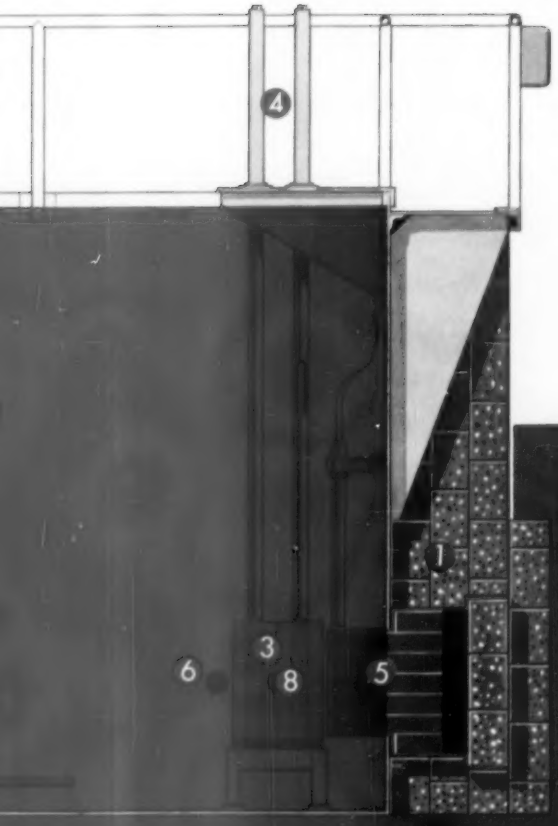
buildings without excavation.





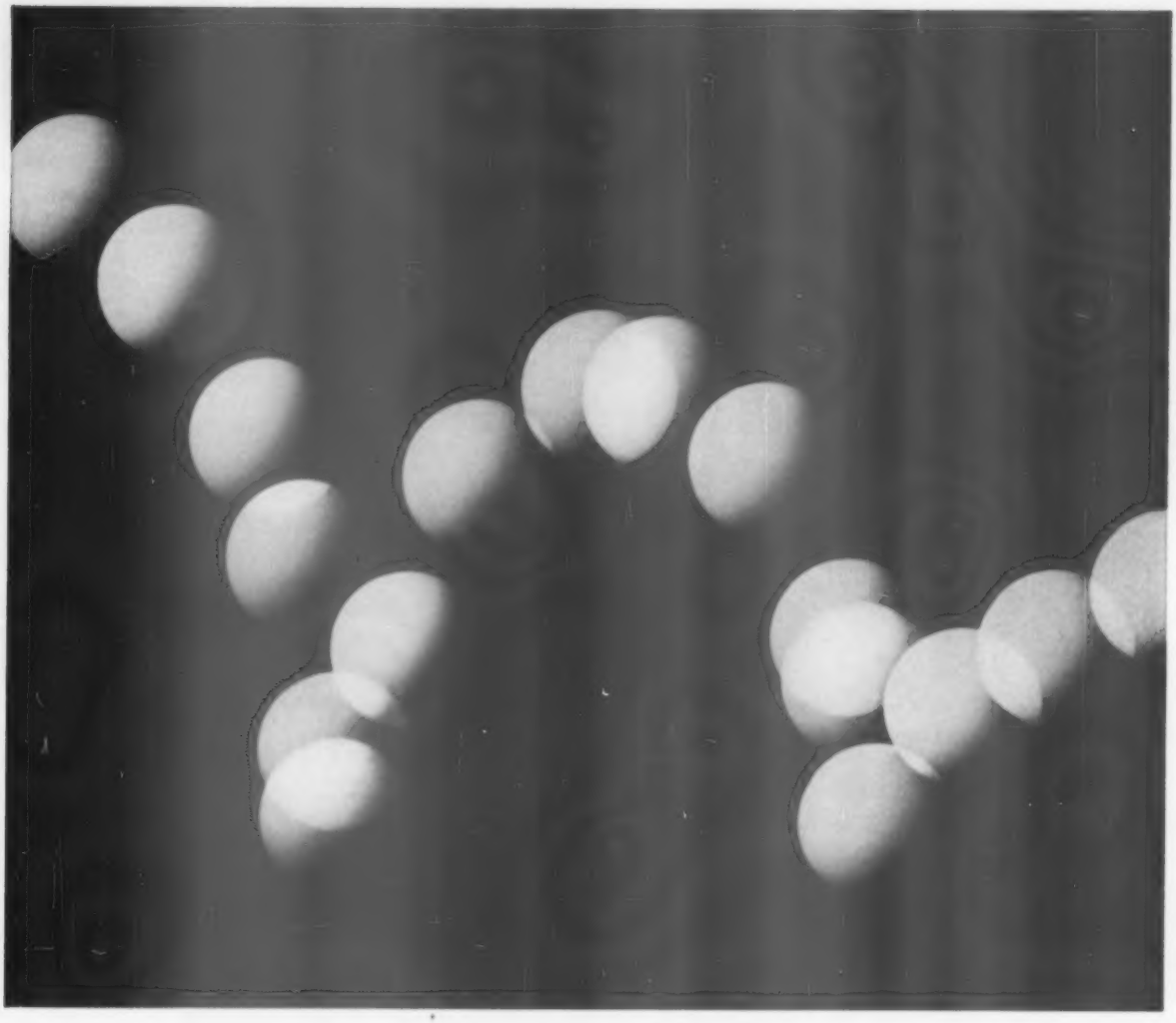
REACTOR CHARACTERISTICS

Power—1 watt
Moderator—light water
Shield—water and concrete
Fuel—20% or 90% enriched uranium (MTR-Type Plate)
Average Flux—10^7 Neutrons/cm^2/sec
Critical Mass—3.0 Kg U^{235}
Refueling Cycle—none required

SERVICES SUPPLIED BY ACF

Supervision of installation
Training of operators
Service guarantee
Laboratory manual
Assistance in preparation of hazards report

Division of ACF Industries, Incorporated



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. . . in the magazine publishing business, it's

The Audit Bureau of Circulations (ABC) is a cooperative organization that sets standards of good business conduct for its publisher members. Twice each year ABC auditors carefully scrutinize the entire circulation structure and operation of every member magazine. In a very real sense, therefore, they are "minding the store" — making sure that no false or misleading claims are made regarding the size or composition of a magazine's audience.

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Loading Face of BNL Research Reactor at Brookhaven National Laboratory, Upton, N. Y.

New Brookhaven fuel element gives improved performance

Scientists and engineers of the Brookhaven National Laboratory have conceived a reactor fuel element of advanced design that promises to greatly improve the usefulness of the BNL Reactor.

The new design differs markedly from the one used originally when the Brookhaven reactor — the first large-scale research reactor in the United States — was put into operation in 1950.

The original fuel elements were natural uranium slugs, 4 in. by 1.1 in. in diameter, canned in finned aluminum tubes. The improved two-foot element, shown above, is an assembly of three fuel plates which contain highly enriched (93%) uranium-aluminum alloy clad in aluminum. The new element is expected to afford five important advantages:

1. Higher neutron flux — an increase from the present 5×10^{13} up to 3×10^{14}.
2. Lower total reactor heat output — a reduction from 24 to 20 megawatts.
3. Less cooling air required—due to improved aerodynamic design of the enriched elements.
4. Higher fuel burn-up of contained U^{235}-up to 40% burn-up with enriched elements compared with 10% obtained with present natural uranium fuel.
5. Reduced reactor inventory of U^{235}-from 385 Kg contained in present fuel to 55 Kg in enriched elements.

With more than eight years' pioneering experience in the fabrication and development of all types of fuel elements, Sylvania-Corning Nuclear Corp. was chosen to supply several hundred test elements of the new design. These were installed in the central "hot spot" of the reactor for proving out.

Results have proven satisfactory and Brookhaven has decided to go ahead with the complete replacement program based on the new design. Sylvania-Corning Nuclear Corp. will supply the 5000 fuel elements needed.

Whether your own reactor is in actual operation, or merely in the planning stage, our scientific and engineering staff is ready to assist you, too, in achieving improved fuel performance. For your files, write to us at Bayside, N. Y. for our booklet on Nuclear Fuel Elements.

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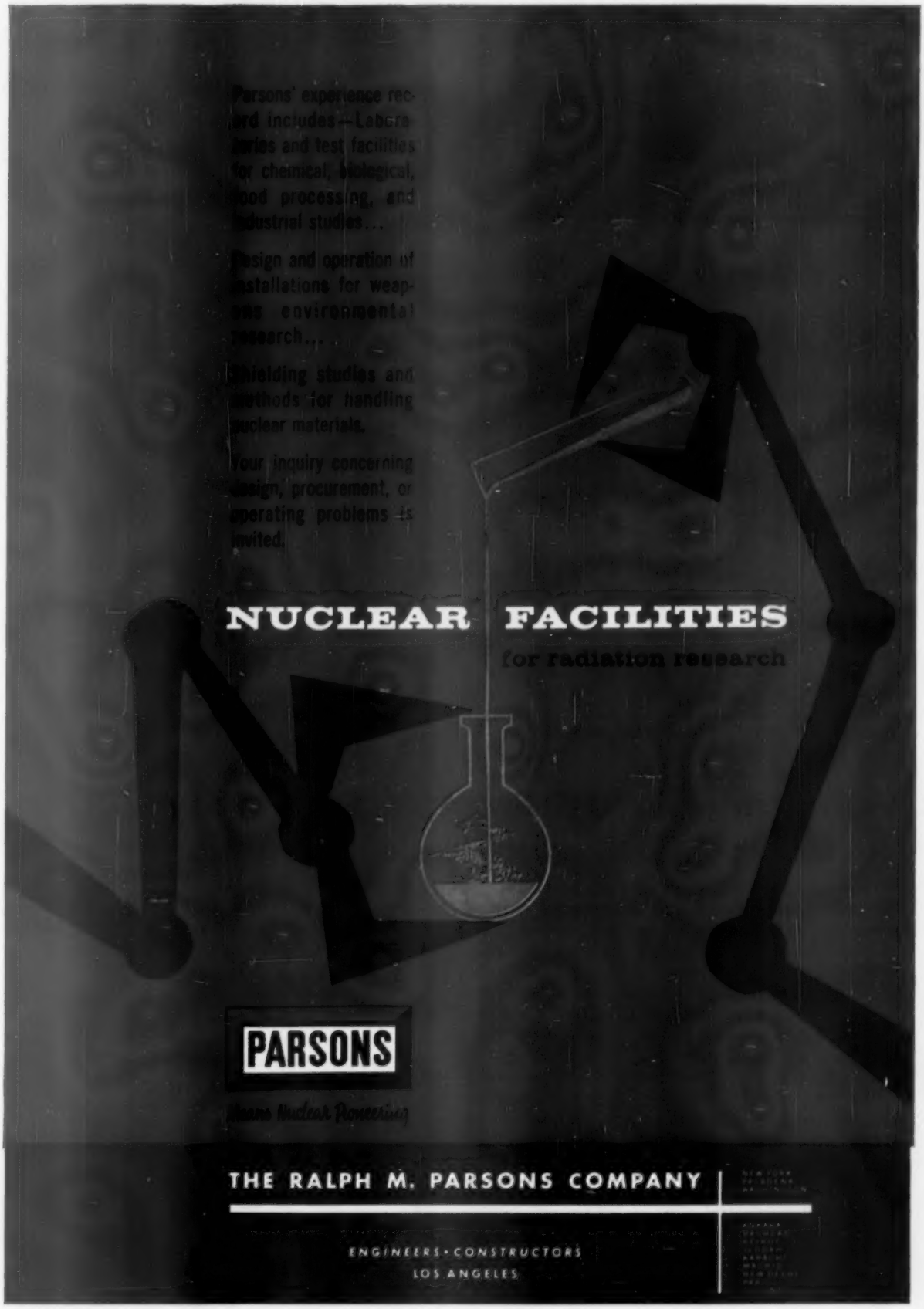
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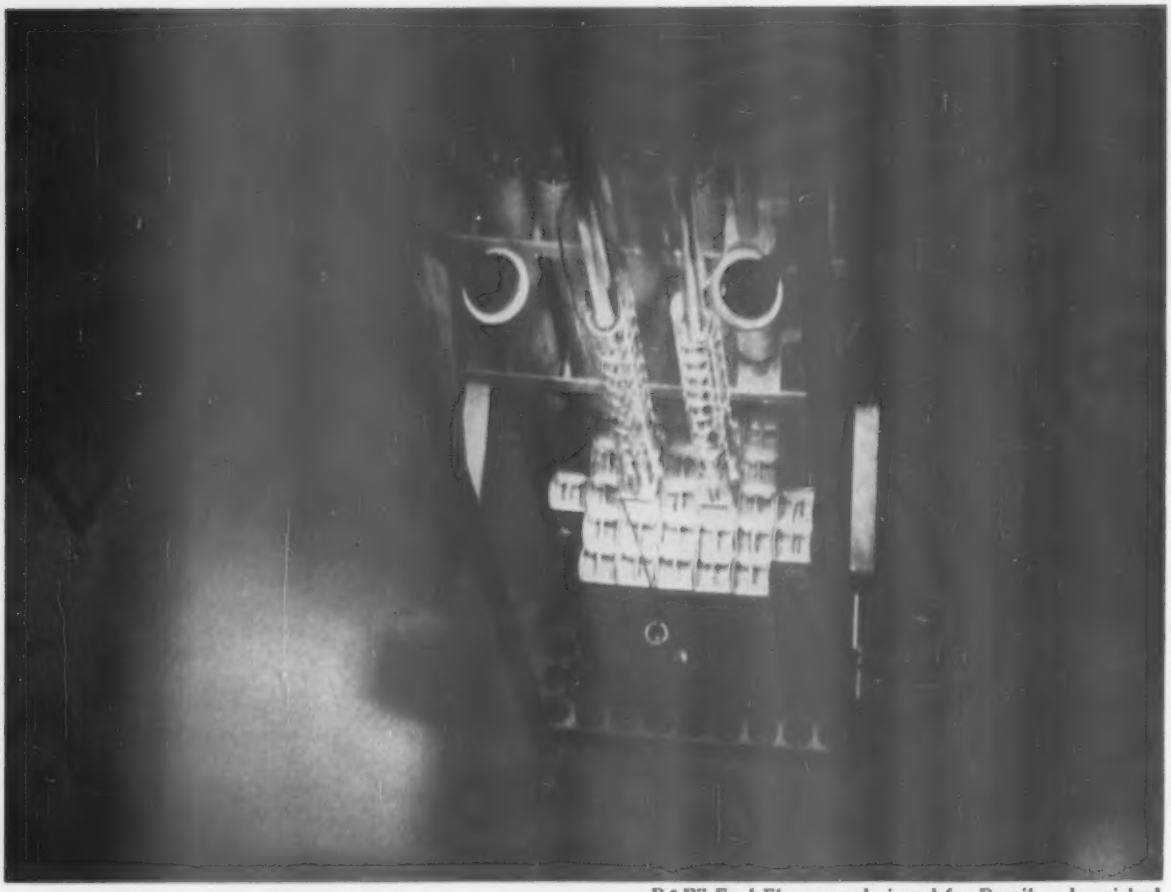

B&W Fuel Elements, designed for Brazil and enriched to 20% U^{235}, shown during critical experiment.

B&W Progress Report:

Validating Core Design of Research Reactors Using 20% Enriched Uranium Elements

To confirm calculations of critical mass requirements for export research reactors using 20%-enriched uranium alloy, B&W conducted validating critical experiments with Hi-U (high-weight uranium-aluminum alloys) fuel elements. These are the elements now being supplied by B&W for South America's first swimming pool reactor at the University of Sao Paulo in Brazil. The critical experiment conducted at Pennsylvania State University under conditions duplicating those expected in Brazil is typical of the thoroughness and sound engineering traditional at B&W.

The Sao Paulo reactor, which was designed and built by B&W, will serve as a source of neutrons and gamma radiations and play an important role in Brazil's contribution to the fields of medical, biological and industrial nuclear research. Great flexibility in the arrangement of fuel elements and methods of irradiation make the B&W swimming pool reactor an adaptable, versatile research tool. This type of research reactor has the lowest cost to flux ratio of all available designs.

In addition to research reactors and fuel elements, B&W designs, manufactures and services complete nuclear power and experimental reactors and a large variety of reactor system components. Write today for further information. The Babcock & Wilcox Company, Atomic Energy Division, 161 East 42nd Street, New York 17, N. Y. AE-45

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ATOMIC ENERGY DIVISION

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For complete description of Alite, plus data on Alite Ceramic-to-Metal Seals, write for Bulletins A-7R and A-20.

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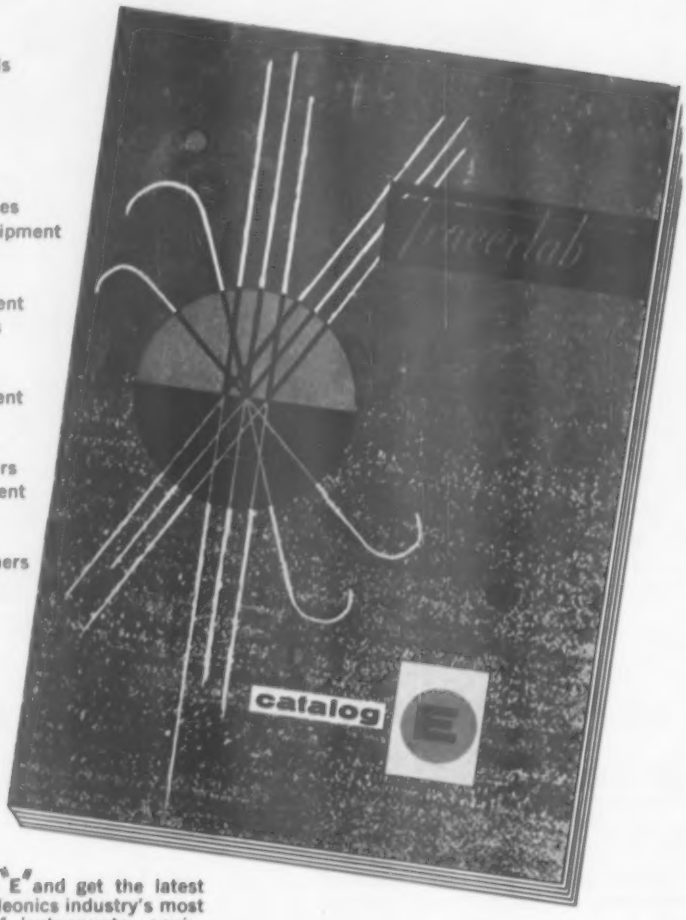

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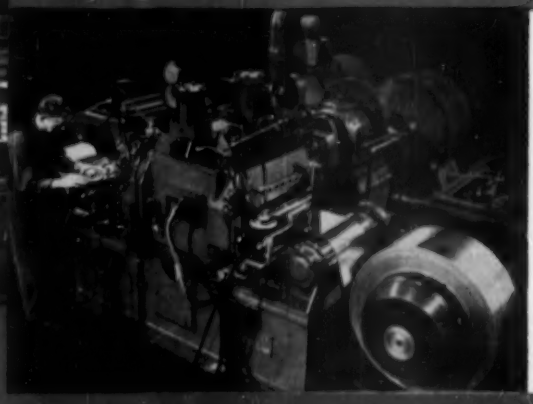

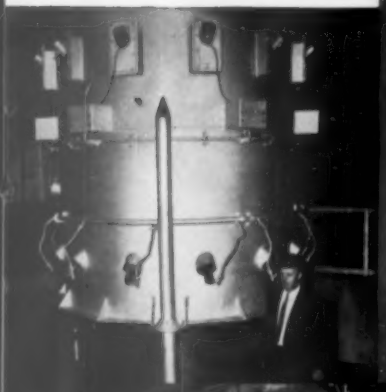

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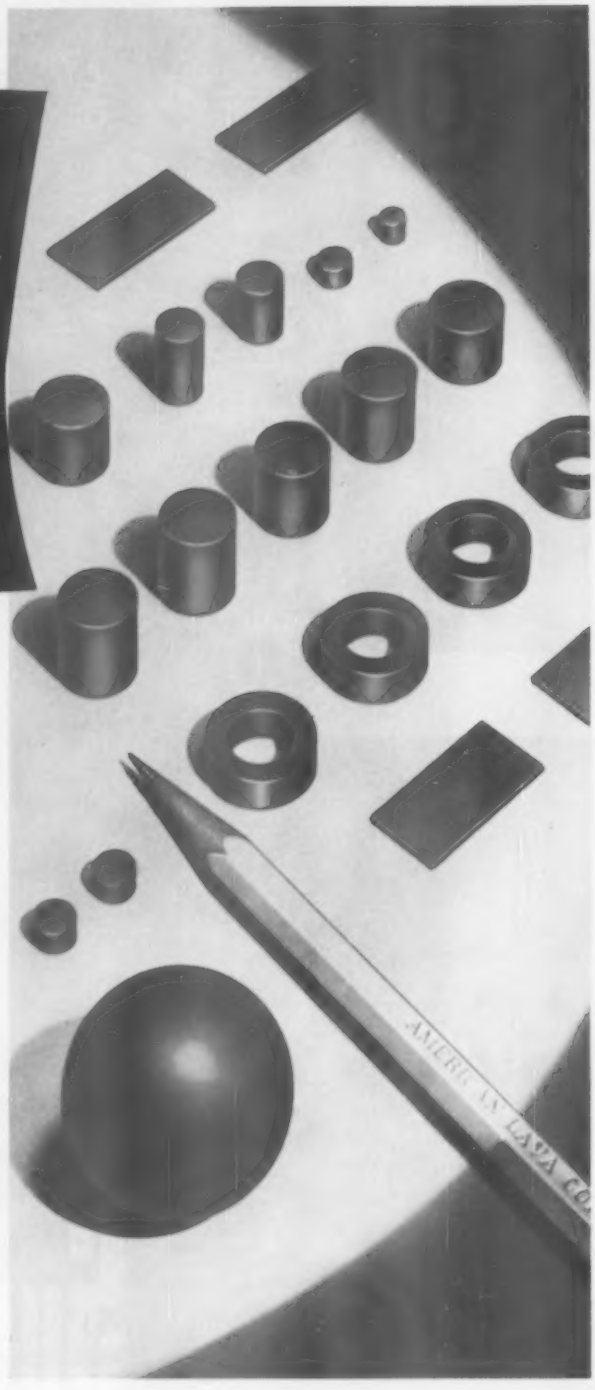

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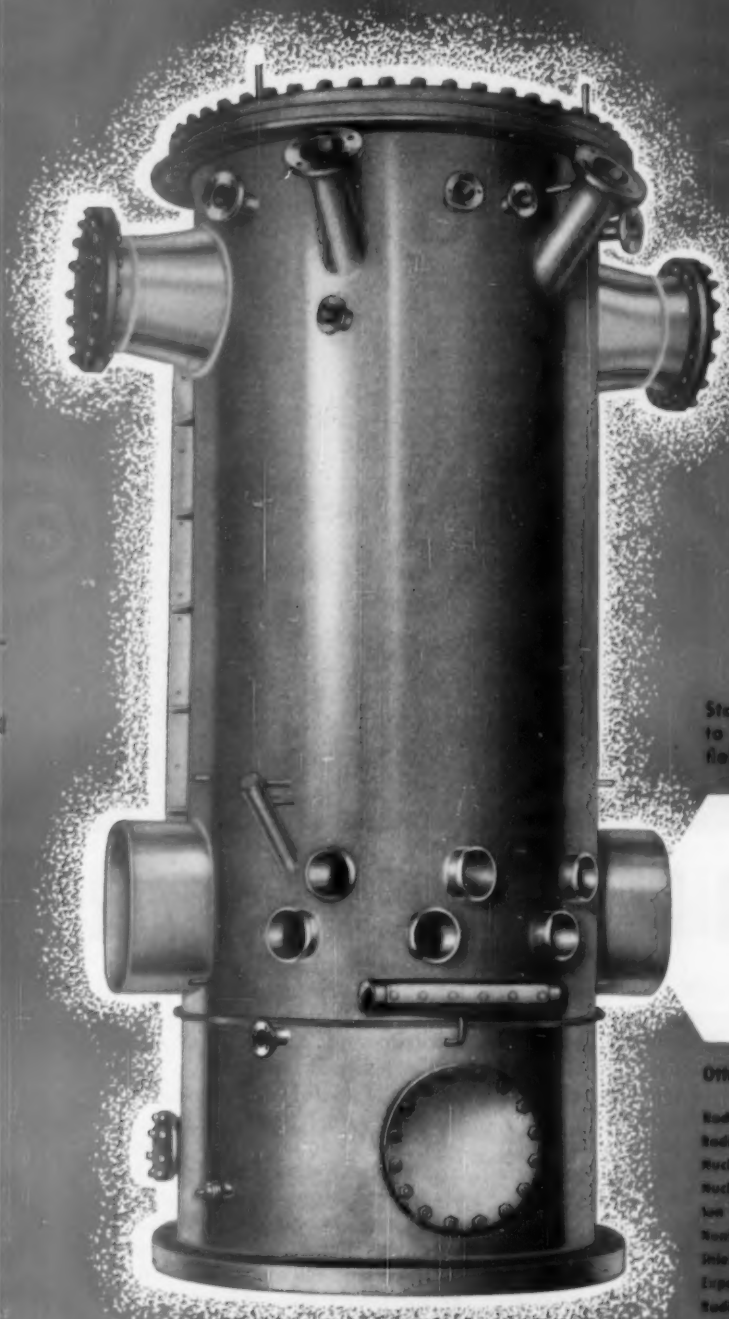

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Take a look at the record . . . FOR RESEARCH REACTORS

Active since the very beginning of the civilian atomic energy program, AMF Atomics has steadily grown in stature as one of the world's leaders in the peaceful application of the atom. Within that time, AMF has built a stockpile of experience in nucleonics that is unique.

It is, today, the world's leader in the design, development and construction of research reactors. Several AMF reactors are already in operation—a number are nearing completion—and there are many others in the fabrication stage, both home and abroad. Of the pool type, heavy-water, and light-water tank types, these AMF reactors offer a maximum of economy as well as inherently safe design and great experimental flexibility.

In the field of training reactors, AMF, working together with Dr. Zinn and GNEC, has developed an advanced version of the Argonaut reactor. Called the "Educator", it offers universities everywhere a thorough yet economically practical training facility.

In power and marine propulsion, too, AMF Atomics has played a leading role, with several variations of a closed-cycle, boiling-water reactor now in the process of development for both government and industry.

Aside from its reactor design and construction activities, AMF Atomics has also taken the lead in development of reactor control-rod drives, remote material-handling equipment, and a number of other specialized nuclear devices. Such AMF equipment is now in actual service at government and industrial installations in many parts of the world.

For a complete reactor facility . . . for specialized control and handling equipment . . . for authoritative assistance at any stage of *your* atomic energy program—look to AMF Atomics.

• *Power and Research Reactors* • *Reactor Control Systems* • *Radio-active Material Handling Equipment* • *Engineering and Design Services*

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—LOOK TO AMF ATOMICS

AMF RESEARCH REACTOR PROJECTS

CUSTOMER	REACTOR TYPE	POWER LEVEL
*Battelle Memorial Institute, Columbus, Ohio	Pool-Type	1000 KW
Industrial Reactor Laboratories, Inc., Plainsboro, N. J.	Pool-Type	5000 KW
University of Buffalo, Buffalo, New York	Pool-Type	1000 KW
*Technical University of Munich, Munich, Germany	Pool-Type	1000 KW
*International Exhibition, Het Atoom, Amsterdam, Netherlands	Tank-Type, Demonstration	10 KW
Japanese Atomic Energy Research Institute, Tokai-Mura, Japan	Heavy Water, Tank-Type	10,000 KW
McMaster University, Hamilton, Ontario	Pool-Type	1000 KW
Greek Atomic Energy Commission, Aghia Paraskevi, Greece	Pool-Type	1000 KW
Union Carbide Corp., Sterling Forest, New York	Pool-Type	5000 KW
Societa Ricerche Impianti Nucleari, Milan, Italy	Pool-Type	1000 KW
AMF-GNE Educator, University of Florida, Gainesville, Florida	Training	10 KW
Portuguese AEC, Lisbon, Portugal	Pool-Type	1000 KW

*In operation

AMF ATOMICS

AMF ATOMICS
A Division of AMERICAN MACHINE & FOUNDRY COMPANY
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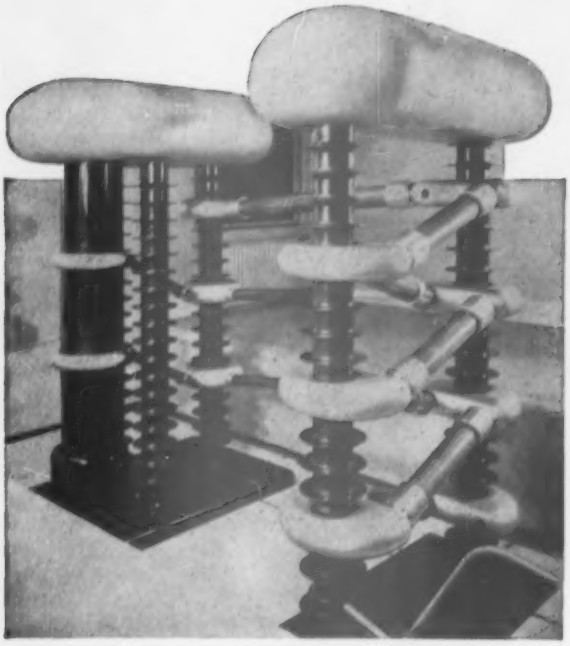


3-stage cascade accelerator in compact version consisting of generator, smoothing filter and accelerating tube.

Philips compact open cascade accelerators

The supreme instrument for all kinds of nuclear research work in the lower energy ranges, especially for the production of intensive neutron fluxes.

The instrument of choice for the training of physicists and engineers whose field of activity is to be the practical application of nuclear energy.

Noteworthy features:

- *High beam intensities*
- *High energy stability*
- *Reliability*
- *Ease of operation and maintenance*
- *Moderate space requirements*

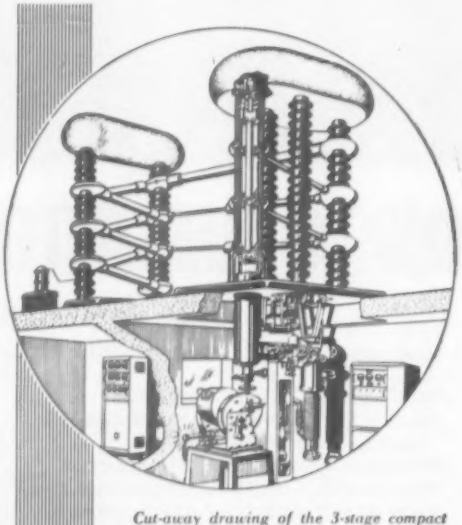
This is but one example of Philips specialized electro-mechanical craftmanship in the field of nuclear equipment for fundamental and applied research; others are:

- *Pressurized cascade accelerators*
- *Linear accelerators*
- *Cyclotrons*
- *Nuclear reactor control equipment*
- *Health control instrumentation*
- *Counters and scalers*
- *Electronic measuring instruments*

No matter in what phase of our activities you may be interested, the Philips Scientific Equipment Group has the staff and the equipment to help you.

PHILIPS

Nuclear Equipment



Cut-away drawing of the 3-stage compact cascade accelerator, showing the complete installation at both floor levels.

For further details on any of these items, please apply to one of the following addresses:

N.V. PHILIPS' GLOEILAMPENFABRIEKEN
Scientific Equipment Department,
EINDHOVEN - HOLLAND

PHILIPS ELECTRICAL LTD.,
Research and Control Instruments Division,
Shaftesbury Avenue, **LONDON W.C.2**

PHILIPS ELECTRONICS INC.,
Instruments Division,
750, South Fulton Avenue, **MOUNT VERNON N.Y.**

experience

With more than four years of successful experience in fabricating uranium alloys, zircaloy components, control rod drive mechanisms, fuel plates, etc., the L&S Machine Company Inc. concentrates on reducing costs. L&S Inc. is an accredited AEC Accountability Station staffed with "Q" & "L" cleared personnel. Whether your fuel processing plans are immediate or for the future you may want to take advantage of the cost savings inherent in our operations. As an added measure, to expand our capability in the nuclear field, L&S Inc. has retained the Nuclear Science and Engineering Corporation of Pittsburgh, Penna., one of the country's leading consulting firms.

gives you lowest cost

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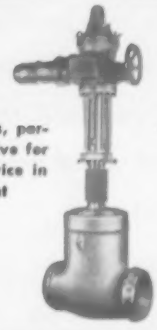
for every type of atomic service

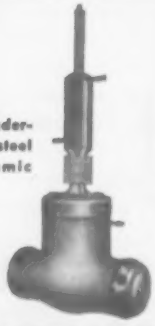
Crane ½-inch, Type 347, bellows-sealed valve

IN EXPERIMENTAL LABORATORIES



Crane all-stainless, parallel-disc gate valve for main coolant service in atomic power plant

IN ATOMIC POWER PRODUCTION



Crane 14-inch, cylinder-operated stainless steel gate valve for atomic power propulsion

IN ATOMIC-POWERED PROPULSION

Pioneer in valves for handling radioactive fluids, Crane builds and operates original and unique equipment for producing and testing valves for atomic services.

If you specify or use valves for radioactive service—in production of atomic materials, propulsion, power generation or products used in atomic research—call on Crane for tested ideas and technical information about the valves and fittings you need.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

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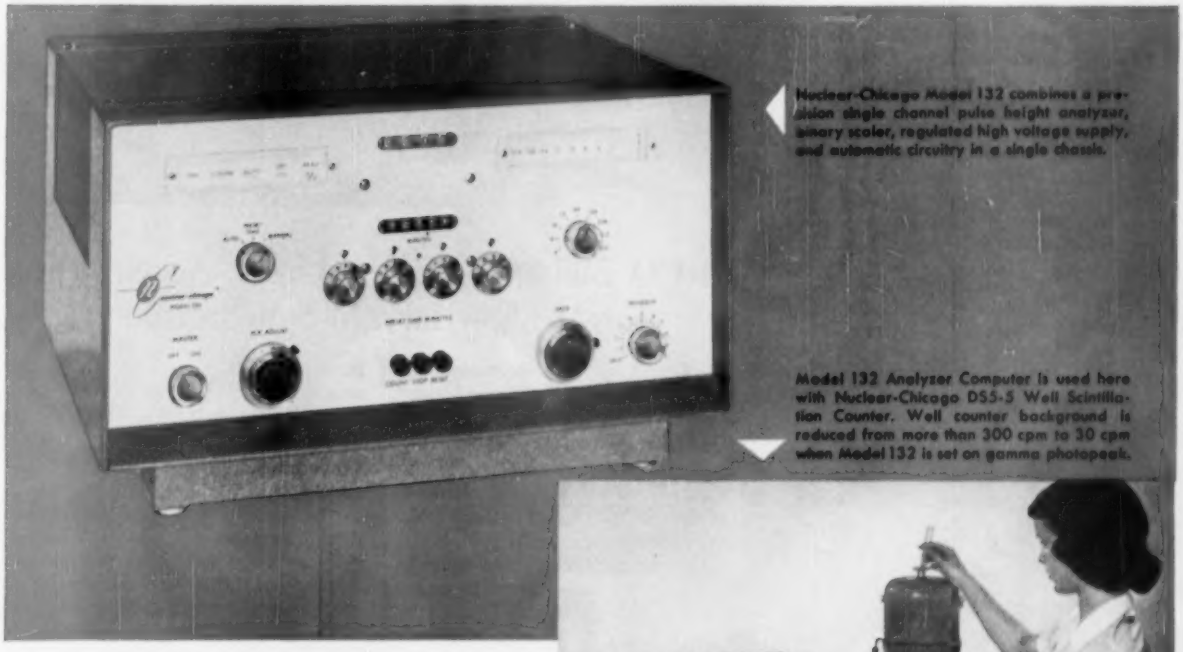
Something new in nuclear spectrometry | from *nuclear - chicago*

All-new Model 132 gamma-ray analyzer computer gives you automatic single-unit counting



Nuclear-Chicago Model 132 combines a precision single channel pulse height analyzer, binary scaler, regulated high voltage supply, and automatic circuitry in a single chassis.

Model 132 Analyzer Computer is used here with Nuclear-Chicago DS5-5 Well Scintillation Counter. Well counter background is reduced from more than 300 cpm to 30 cpm when Model 132 is set on gamma photopeak.

Here is your new automatic gamma-ray counting system in one compact, versatile unit. Nuclear-Chicago Model 132 Analyzer Computer combines a precision pulse-height analyzer, a reliable binary scaler, extremely stable high voltage supply and a push-button computing circuit for use with all gamma-sensitive scintillation detectors.

Pulse height analyzer section of the 132 features non-overloading linear amplifier, base level discriminator adjustable to 100 volts with 10-turn potentiometer, "window" control variable from 0 to 10 volts. High voltage may be varied from 500 to 1500 volts, will remain stable to 0.05% for periods of 24 hours. Scaler section of instruments has 2 microsecond scale of 512, electrically reset register and timer, automatic preset time and preset count circuits.

For full particulars on Model 132 Analyzer Computer and over 60 other new precision instruments for radiation measurement, more than 200 radiochemical compounds and nucleonic services of every nature . . . please write for new catalogs and price lists.

OUTSTANDING FEATURES OF THE NEW MODEL 132 ANALYZER COMPUTER

- a single compact counting system for use with all gamma-sensitive probe or well-type scintillation counters.
- selective pulse-height analyzer "tunes in" desired gamma-ray energy, eliminates background and scattered radiation from measurement.
- scaler provides wide choice of scaling factors with automatic built-in preset count and preset time circuits. Any preset time period from 0.01 minute to 99.99 minutes may be selected with a repeat accuracy of 0.04 seconds. Preset count circuit permits selection of 8 different counts from 400 to 51,200.
- completely automatic push-button operation with high-speed electrical reset, automatic "percentage reading" for ratio measurements.

nuclear - chicago
CORPORATION
235 WEST ERIE STREET • CHICAGO 10, ILLINOIS

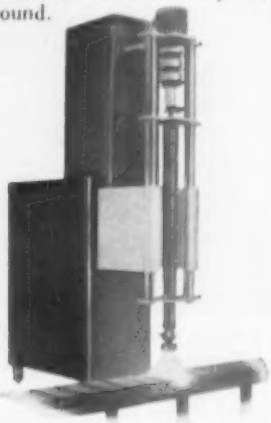
arco APPLIED RADIATION news

Up to 6" Penetration, Plus Capacity, Timing, for Plastics, Chemical Radiation

Cross-fired 20 Mev ARCO linear accelerators such as the M.I.T.-Harvard machine can irradiate, with *electrons*, materials of unit density up to 6 inches thick. Twenty Mev *x-rays*, efficiently produced by ARCO linear accelerators at this energy, can treat materials several times this thick. Since ARCO linear accelerators are also available at lower energies, they are well suited to treat a wide variety of products and to penetrate pressurized chemical reaction systems.

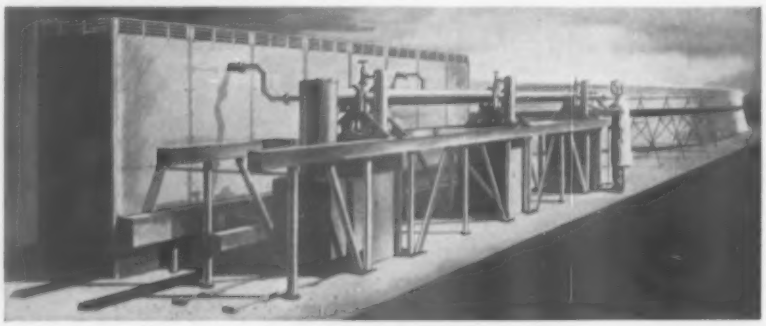
From 1 to 60 Kilowatts

ARCO's exclusive klystron injection techniques* permit very high beam power to be achieved. Larger units can process tens of thousands of megarad-pounds per hour. As capacity rises, unit processing costs fall rapidly. Including amortization, products can be irradiated for as low as 2 to 3 mills per megarad-pound.



2-10 Mev, 4 kilowatt ARCO Mark 1-F4 Linear Accelerator will penetrate 1¼ inches from one side, provides electrons, x-rays and neutrons for research versatility.

The ARCO Mark 1-F4 Accelerator, designed for research and limited radiation processing, exemplifies ARCO techniques. The Mark 1-F4 delivers 4 kilowatts of 6 Mev electrons; for research use, beam energy can be varied from 2 to 10 Mev.



ARCO Building 20 Mev Linear Accelerator for M.I.T.—Harvard Synchrotron

A 20 Mev linear accelerator injector for the 6 Bev M.I.T.-Harvard synchrotron is now under construction by Applied Radiation Corporation.

The new ARCO accelerator provides 5 megawatts peak beam power, equalled by only a few accelerators in the world. It will allow the big M.I.T.-Harvard electron synchrotron to provide beam currents at an energy 6 times higher than today possible. To achieve high beam trapping efficiency required for this level of operation, unusually precise control of beam energy and frequency is mandatory.

ARCO's exclusive waveguide design permits frequency control within less than $\pm$ 0.1% at 2,855 MC. Over 0.21 amperes beam current are within an energy interval of 2 Mev and have less than $\pm$ 3 x 10^{-3} radians angular divergence. Except for these unusually demanding requirements, the new ARCO accelerator is similar to other high energy ARCO machines already sold for physics research.

In common with other ARCO machines, the M.I.T.-Harvard accelerator embodies a number of significant design innovations. All organic materials are eliminated from the vacuum system, and the entire accelerator from electron gun to output beam analyzer is baked at 400° C. ARCO engineers have found it practical to attain operating vacuums better than 10^{-7} mm. Hg. without cold traps.

Massachusetts Institute of Technology and Harvard scientists will use the synchrotron to study proton and anti-proton pairs, strange new mesons and hyperons, electron structure and for studies involving pions, muons and higher energy nucleons.

Available Now

Unlike radioactive isotopes, ARCO linear accelerators are available today. Built to widely varying beam requirements, ARCO accelerators are excellent for applications as diverse as sterilizing surgical dressings, research in food preservation and large volume chemical processing.

Applied Radiation Corporation specializes in the development and manufacture of linear electron accelerators. Service Irradiation Centers at Walnut Creek, California, and soon at Rockford, Illinois, make linear accelerators available for experimental and limited commercial irradiations. Let us help you investigate radiation processing. Write for technical literature describing Applied Radiation's accelerators and service facilities.

*ARCO accelerators are available with either separate or integral klystron injection.

ARCO APPLIED RADIATION CORPORATION

High energy radiation for research and processing

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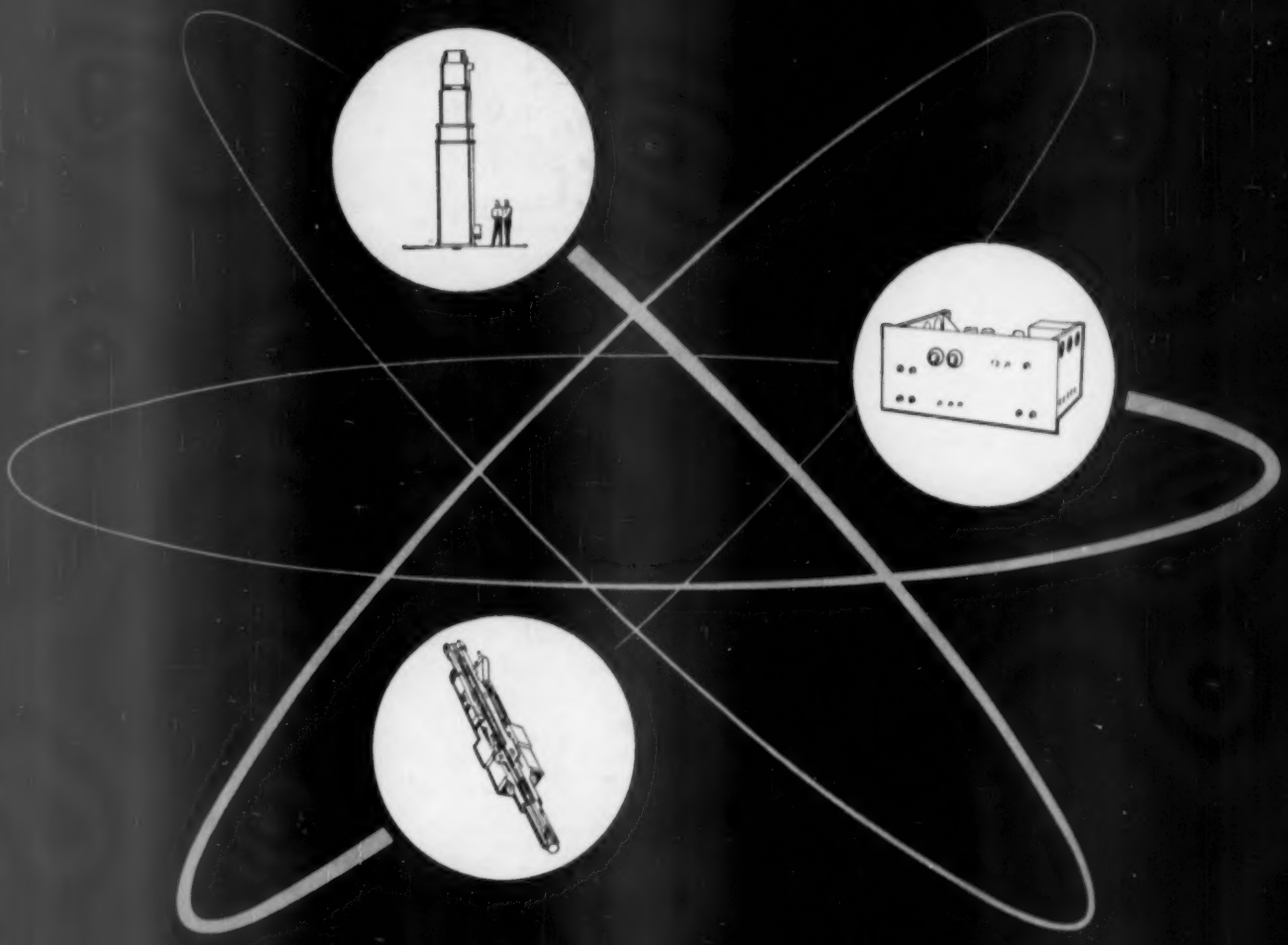

At BORG-WARNER, "Good Enough" Never Is

Whether it's a nuclear pump, radiation counter, control rod drive mechanism, remote control electro-mechanical manipulator, or other Borg-Warner product in the nuclear field . . . in each you see the fine quality that reflects the special pride we take in making it.

That's because we are not content with just "good enough." The Borg-Warner way is to "design it better—make it better." To meet this challenge, B-W scientists and engineers are continually researching ways to improve existing products and to develop new ones. B-W quality controls maintain uniformly high production standards. And constant testing assures dependable product performance.

In these ways, Borg-Warner engineering skills and production facilities are daily contributing to important technological advances in the challenging world of nucleonics. For example, see the following pages.

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MAKE IT BETTER

ENGINEERING B-W PRODUCTION

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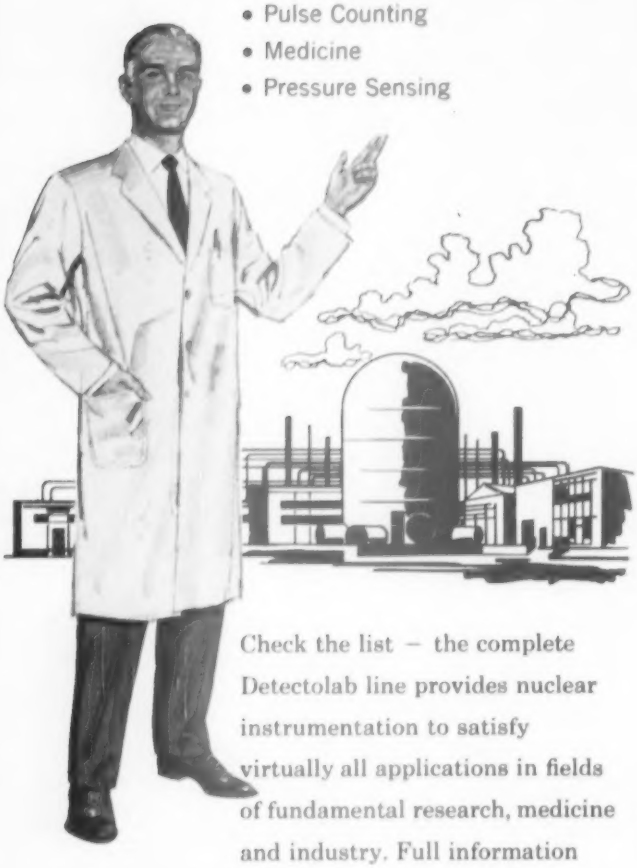
For the list of expanding atomic applications

Nuclear Instrumentation by Detectolab®

- Reactor Control
- Spectrometry
- Pulse Counting
- Medicine
- Pressure Sensing



Check the list — the complete Detectolab line provides nuclear instrumentation to satisfy virtually all applications in fields of fundamental research, medicine and industry. Full information relative to Detectolab products obtainable upon request.

Detectolab instruments are products of

BJ ELECTRONICS

Reliability you can count upon

Borg-Warner Corporation

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☑ REACTOR CONTROL INSTRUMENTATION

DR5

DR1-7, 9 – Complete instrumentation for start-up, continuous operation and safety shut-down of nuclear reactors.

☑ SPECTROMETRY INSTRUMENTATION

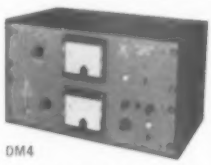
DZ46

DZ41—Gamma Ray Spectrometer: Reduces background as much as 95%. Resolves elements as close as 50 Kev. High stability and reproducibility.

DZ46—Automatic Gamma Ray Spectrum Recorder: Single or repetitive scan operation; five selective scan speeds; selective partial spectrum scan. Provisions for 10 mv or 0-1 ma graphic recorder.

Scintillation detectors and well-type counters available as accessory items for spectrometers.

☑ COUNTING INSTRUMENTATION



DM4

DM4—Count Rate Meter: Seven full scale ranges to 200,000 cpm. Responses: 3, 10, 30 seconds. Input sensitivity variable from 0.1 to 5v, negative.

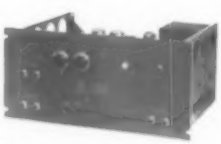
DS8 – Precision Binary Scaler: Precision discriminator 0-100v positive, 0-50v negative; scale-of-64 or scale-of-8 panel selection; self-contained 8 plus.

☑ MEDICAL INSTRUMENTATION

DZ21

DZ21—Medical Spectrometer: Window stability 1% of window width setting. Other medical instruments include spectrometers for uptake studies and a variety of counting and scaling units for basic research and clinical investigation.

☑ RESEARCH INSTRUMENTATION



DZ4

DZ4 – Coincidence Circuit: Resolving time: FAST Channel, 0.01 microsec. to several microsec.

HIGH GAIN AMPLIFIER: Write for Technical Data relative to the new Detectolab non-overload pulse amplifiers. Provides the greatest non-overload factor of any instrument currently available.

☑ VIBROTRON® TRANSDUCER SYSTEMS

Vibrotron Transducer and Amplifier

For any application involving the sensing of pressure, inquire regarding measurement systems comprised of Vibrotron Digital Transducers. These miniature, electronic, sensing devices apply the basic engineering principle of the vibrating wire to sense changes in pressure.

Output in the form of a frequency signal is provided for direct readout as a numerical value. Special transducers, suitable for use in areas of radioactivity, are available upon request.

A simplified guide to select...

pumps for nuclear fluids!

The chart below offers an easy guide to proven pump types now available for nuclear fluid handling. These pumps are listed by types of fluid circulated in the three basic commercial reactor developments.

BJ Liner Motor Pump

	FLUID CIRCULATED	RECOMMENDED PUMPS AVAILABLE	PERFORMANCE RANGES
1	PRESSURIZED WATER, BOILING WATER AND HEAVY WATER	a. Liner Motor Pumps	Capacities: To 17,000 gpm Pressures: To 5300 psi Temperatures: To 700° F.
		b. Mechanically-Sealed Pumps	Capacities: To 125,000 gpm Pressures: To 2,000 psi Temperatures: To 600° F.
2	LIQUID METALS (SODIUM, BISMUTH, ETC.)	a. Vertical-Inert Gas (Mechanically-Sealed)	Capacities: To 25,000 gpm *Pressures: Temperatures: To 1600° F.
		b. Vertical-Oil Filled Motor Pump (Mechanically-Sealed)	Capacities: To 5,000 gpm *Pressures: Temperatures: To 1600° F.
		c. Vertical-Gas Filled Motor Pump	Capacities: To 5,000 gpm *Pressures: Temperatures: To 1600° F.
	*Pressures as required	d. Liner Motor Pumps	Capacities: To 5,000 gpm *Pressures: Temperatures: To 1600° F.
3	ORGANIC	a. Special Process Pumps (Mechanically-Sealed)	Capacities, pressures and temperatures as required.
4	EXPERIMENTAL NUCLEAR DEVELOPMENTS	Byron Jackson's Nuclear Pump Section is ready to assist you in new development projects. All of the above pump types are available and new designs can be created for experimentation.	Capacities, pressures and temperatures as required.

World's largest Liquid Sodium Pump

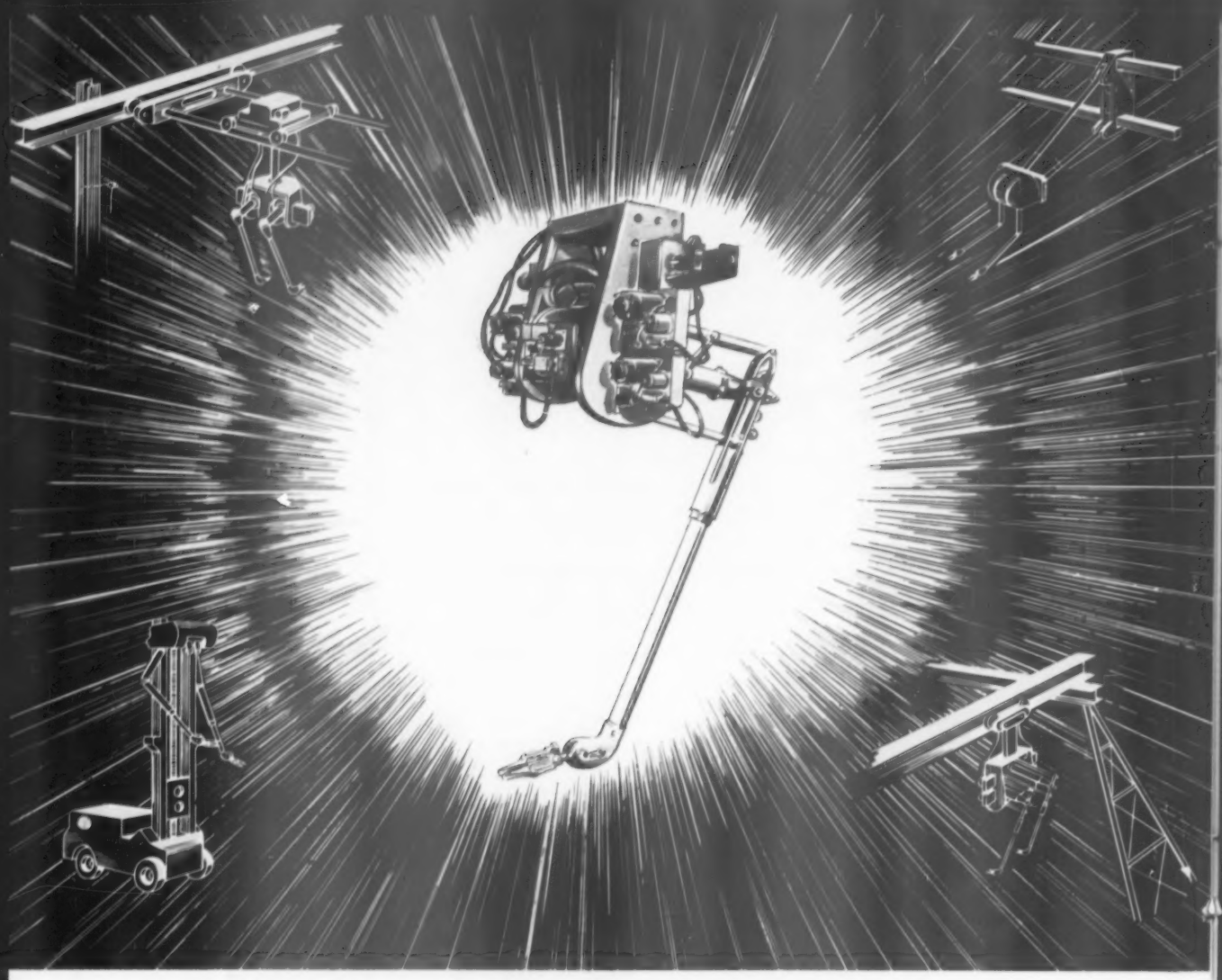
ONLY BYRON JACKSON designs and manufactures nuclear pumps and mechanical shaft seals to answer all nuclear fluid handling requirements. BJ Pumps are in use or on order for almost all major commercial reactor developments in the United States. This broad background in nuclear pumping methods can help you find the best answer to your small or large nuclear pumping requirements... with important savings in time and money.

BJ Special Process Pump for Organic Fluids

BJ
SINCE 1872

BYRON JACKSON PUMPS
INCORPORATED
A Subsidiary of Borg-Warner Corporation
BOX 2017A, TERMINAL ANNEX · LOS ANGELES 54, CALIFORNIA

¼ HP, 2000 PSI Liner Motor Pump



How far is REMOTE?

Truly remote handling, without the limitations of mechanical linkage between operator and slave, is becoming a necessity in today's nuclear research and industrial installations.

The Marvel-Schebler Electro-Mechanical Manipulator is designed to provide fully remote operation with a true sense of feel and full proportional control with *only an electric cable* between master and slave. Operator training is extremely simple and operator efficiency is greatly increased.

Major economies are possible in cave construction costs because of decreased head-room requirements.

A wide variety of manipulator mounting systems are possible to provide a complete remote handling system for any application.

We're handling tomorrow's handling problems TODAY.

MARVEL-SCHEBLER *Products Division*
BORG-WARNER CORPORATION, DECATUR, ILLINOIS
Export Sales: Borg-Warner International, 36 South Wabash Avenue, Chicago 3, Illinois

MARVEL-SCHEBLER B-W BORG-WARNER

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Learn the facts about money-saving, custom-engineered SOLA-FLEX® expansion joints

TODAY NUCLEAR TECHNOLOGY is in the hands of America's most competent engineers. More and more of them are specifying Sola-Flex expansion joints for important atomic energy installations. They know that Sola-Flex joints are engineered to meet every piping need, no matter how tough the temperature or pressure demands. And Sola-Flex joints are economical, too —in initial cost and long life.

They are made from a variety of stainless and high alloys, from ½ inch to 35 feet in diameter. They handle pressures up to 3500 psi for special applications. And they are being built for service from −320F to 1200F.

It will pay you to learn more about Solar's complete line of industrial bellows and expansion joints. Send for this new folder today. Write to Department D-202, Solar Aircraft Company, San Diego 12, California. *Designers, developers and manufacturers of gas turbines, expansion joints and aircraft engine, airframe and missile components.*

SOLAR AIRCRAFT COMPANY SAN DIEGO DES MOINES

FOR NEW SOLA-FLEX FOLDER MAIL TO:
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ADDRESS_____

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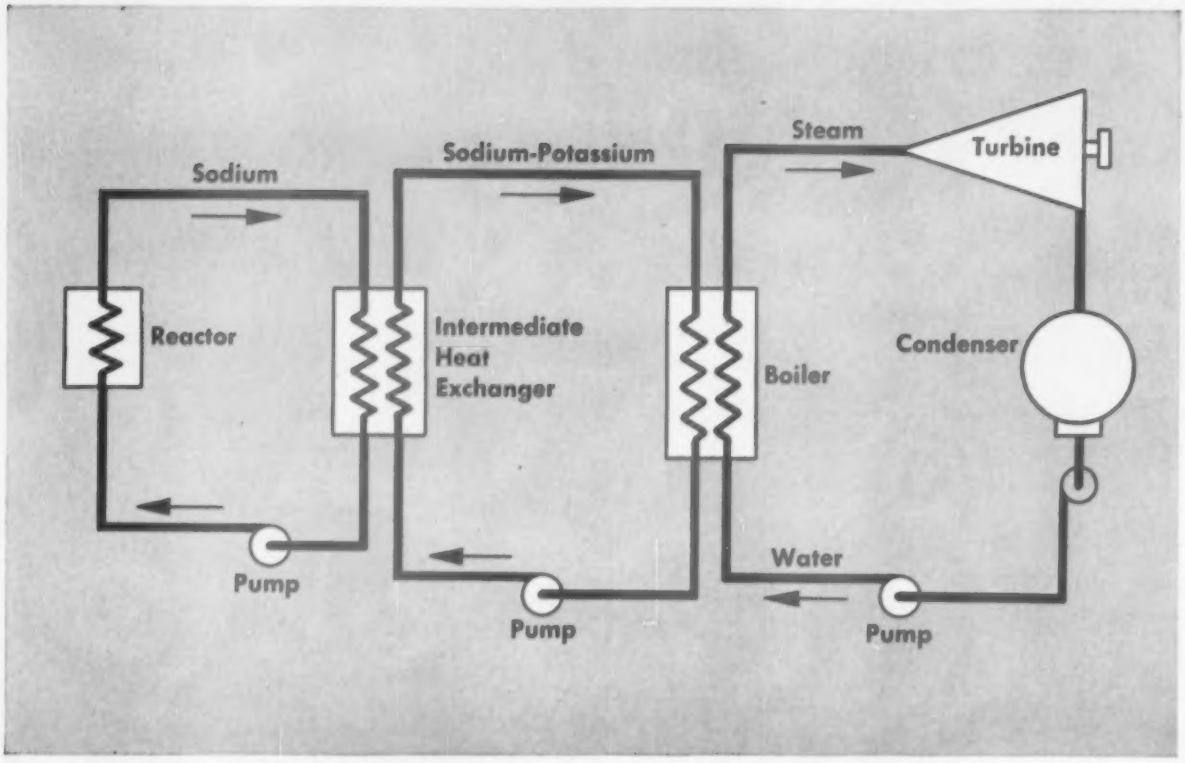
ENGINEERS WANTED. *Unlimited opportunities, challenging projects, good living with Solar! Send for new brochure.*



What makes LIQUID SODIUM a first-rate Reactor Coolant?

At least 6 nuclear power plants now completed, planned, or under construction will use sodium metal in liquid form to transfer heat from reactor to steam generation circuit. Why have the designers of these systems selected sodium for the job?

Because sodium is a liquid from 207° to 1621° F., a sodium-cooled system can operate at high temperatures without expensive pressurization. In this way it can yield steam cycle efficiencies equivalent to those of conventional power plants.

Liquid sodium can be pumped and circulated as easily as water. Further, because liquid sodium has good electrical conductivity, it can be circulated with an electromagnetic pump containing no moving parts. With the low melting point of 207° F., it won't solidify in the heat exchanger system if the reactor is slowed down.

Sodium has high heat conductivity, as well as good radiation stability and high temperature stability. In the absence of oxygen, water, and other impurities, it can be handled without corrosion in iron and steel equipment.

U.S.I. supplies more sodium to outside industry than any other producer of the metal. For complete information on sodium and its handling, send for the free 40-page booklet "HANDLING METALLIC SODIUM ON A PLANT SCALE".

SOME REACTORS WHICH WILL USE SODIUM:

(1) **California**—sodium-graphite reactor, 7,500 kw
(2) **Nebraska**—sodium-graphite reactor, 75,000 kw
(3) **Idaho**—fast breeder reactor, 15,000 kw
(4) **Michigan**—fast breeder reactor, 100,000 kw
(5) **Alaska (Anchorage)**—sodium-deuterium reactor, 10,000 kw
(6) **Seawolf**—sodium-beryllium reactor
(7) **New York**—sodium-beryllium reactor

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers and Chemical Corporation
99 Park Avenue, New York 16, N. Y.

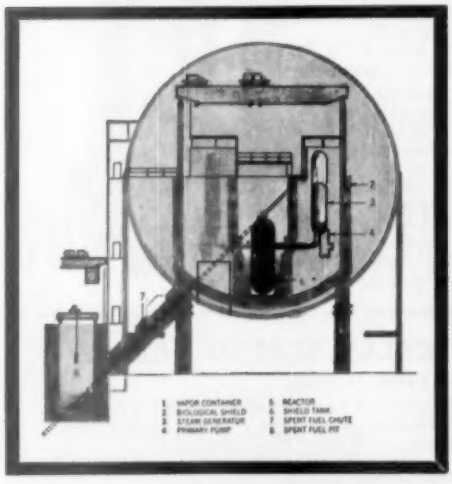
ATOMIC POWER FOR COMMERCIAL USE
an established reality by Westinghouse

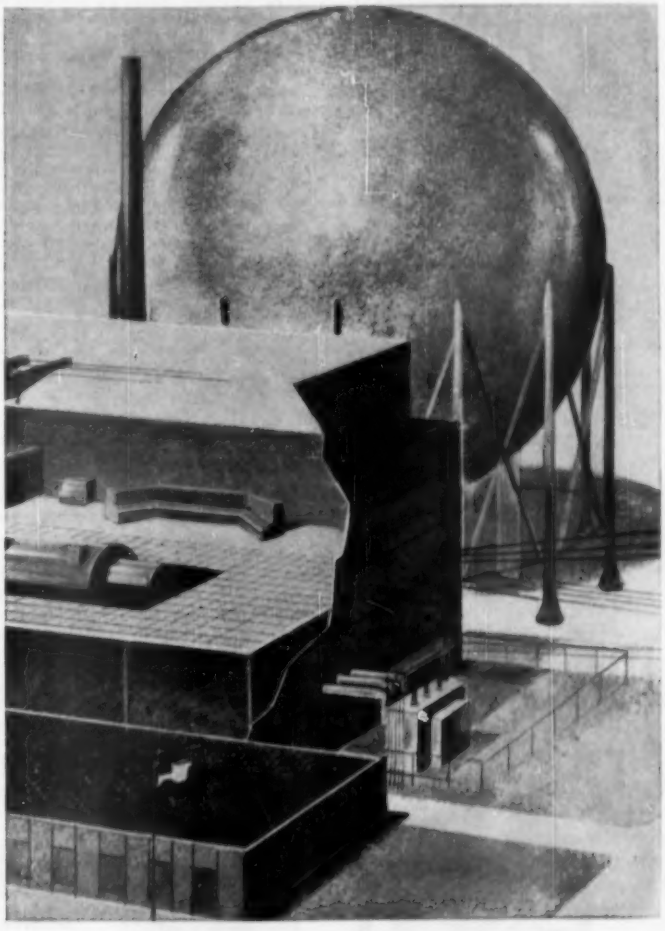
YANKEE—134,000 KW Power Generating Station for New England

The Yankee Atomic Electric Company is building a 134,000 KW atomic power plant near Rowe, Massachusetts. The plant is sponsored by twelve of New England's leading utilities. It is scheduled for operation in late 1960.

This first atomic power plant in New England will be similar to a standard steam-electric station except for the "boiler equipment." An advanced, pressurized water atomic reactor with its controls, auxiliaries and heat exchangers will replace a conventional coal or oil-fired boiler.

The research and development program for this project, financed jointly by Yankee and the Atomic Energy Commission, is being carried out by the Westinghouse Electric Corporation. Design, engineering and construction of the plant itself is being handled by Westinghouse and the Stone & Webster Engineering Corporation.





WESTINGHOUSE IN COMMERCIAL MARKETS

Westinghouse has been a leader in research and in the development of power apparatus for over seventy years. It was to maintain this leadership that the company entered the nuclear power field over eighteen years ago.

In the commercial atomic field, the Atomic Power Department (APD) is responsible for the design, development, application and sale of nuclear steam generators for the generation of electric power and industrial steam, and for merchant marine propulsion. APD is also charged with the coordination of applications which involve the complete apparatus which Westinghouse manufactures for atomic power plants.

For information or assistance relating to nuclear problems, contact your Westinghouse Sales Engineer, or write: **Westinghouse Electric Corporation, 3 Gateway Center, Post Office Box 868, Pittsburgh 30, Pennsylvania.**

YOU CAN BE SURE...IF IT'S Westinghouse

PROVEN COMPONENTS FOR POWER REACTORS

Westinghouse experience gained in building components for working reactors is your assurance of safe, reliable operation

HERMETICALLY SEALED (CANNED) MOTOR PUMPS

Application: Westinghouse hermetically sealed motor-pumps, known also as "canned motor pumps," handle radioactive water with zero leakage. They have proven a convenient means of pumping high temperature fluids for nuclear reactors, and other high system pressure applications. Models are also available for pumping organic fluids, slurries and liquid metals—the latter at system temperatures as high as 1600 F. Special designs can be developed to handle liquids at system pressures up to 10,000 psi.

Advantages: ZERO LEAKAGE: System may be hermetically sealed by welding. LOW MAINTENANCE: No mechanical seal or stuffing boxes are used—no auxiliary equipment is required. System fluid lubricates bearings. TOTALLY ENCLOSED: All operating parts are completely protected by the external casing. BUILT-IN HEAT EXCHANGER: Wrap-around type heat exchanger maintains safe winding temperatures. NO CONTAMINATION: Elimination of stuffing boxes and use of proper pump materials protects system from contamination. CARTRIDGE MOTOR UNIT: Motor and impeller are removable as a unit from the pump casing, which is normally welded into the piping system. CORROSION RESISTANT: Use of proper materials make feasible the pumping of a wide range of corrosive fluids.

MECHANICAL LIQUID METAL PUMPS

Application: Zero-leakage Westinghouse mechanical liquid metal pumps have been developed to handle liquid metals. The centrifugal pump design makes them ideal for applications of high head and large flow rates. Totally enclosed construction has eliminated external shaft extensions and resultant rotating shaft seals. Suction and discharge nozzles of the pump casing are designed to be welded into the piping system. The pumps are guaranteed to be hermetically sealed.

Advantages: ZERO LEAKAGE: System may be hermetically sealed by welding. LOW MAINTENANCE: No shaft seals are used—no auxiliary equipment is required. TOTALLY ENCLOSED: All operating parts are completely protected by external casing. NO CONTAMINATION: Elimination of frozen, mechanical, or gas buffer seals, and use of proper pump materials protect system from contamination. INTEGRAL COOLING: Built-in heat exchanger maintains proper motor and bearing temperatures. CARTRIDGE MOTOR UNIT: Motor and impeller are removable as a unit from the pump casing. CORROSION RESISTANT: Use of proper materials makes feasible the pumping of a wide range of corrosive liquid metals. CONVENTIONAL ELECTRICAL SYSTEM: The reliable induction motor drive requires only a standard 440-volt, 3-phase, 60-cycle power supply.

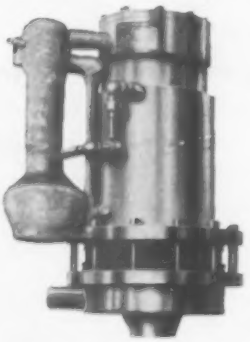


Figure 1

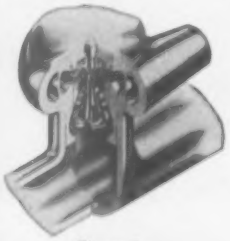


Figure 2

Figure 3

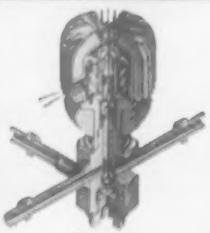


Figure 4

HERMETICALLY SEALED VALVES

Swing Check Valve *(Figure 1)*

10" and 20" lines, is of hermetically-sealed, corrosion-resistant construction—valves are specifically designed for reactor system.

Center Guided Check Valve *(Figure 2)*

"Tear-drop" symmetry provides for integral installation with canned motor pump volutes handling radioactive fluids.

Advantages: Reduced pressure drop. Improved hydraulic efficiency. Dashpot control for valve closing. No disc slamming or water hammer. Easily achieved thermosyphoning. Increased pipe line space (ships). Reduction in overall capital costs. Positive functional spring positioning.

Large Cylinder-operated Gate Valve *(Figure 3)*

A main line stop valve for 10" to 20" lines. Operated by the primary coolant through a separate control system.

Small Three-way Solenoid Poppet *(Figure 4)*

Remote control of larger valves. For ⅛" to 3" lines. Two can be grouped to perform same function as single, multiple-port control valve.

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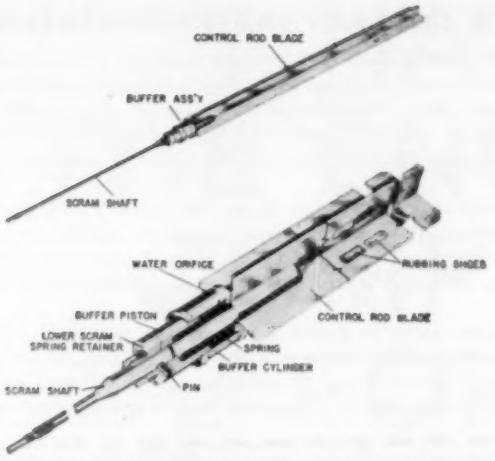


CONTROL ROD DRIVE MECHANISMS

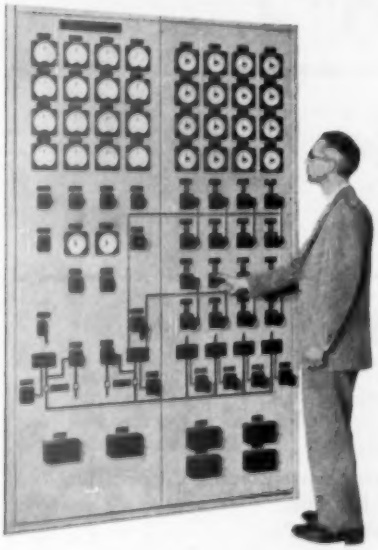
Westinghouse makes a complete line of control rod drive mechanisms to control and regulate nuclear reaction. These reliable and safe operating mechanisms control the mechanical motion of control rods within a sealed reactor system by four basic designs: (1) driving through a seal with an external mechanism; (2) hydraulic mechanisms using the system fluid as the working medium; or (3) by electromechanical means, using a canned motor to produce mechanical motion within the sealed system. (4) by electromagnetic means, using magnetic coils to produce digital mechanical motion within the sealed system.

Control rod drive mechanisms are furnished by Westinghouse as part of a complete nuclear reactor package, or as a separate product for you to design into your own reactor. Engineering assistance and application data are available on request.

ATOMIC FUELS AND CORE ASSEMBLIES

Complete cores for nuclear reactors including fuel elements, control rods and other core components, are being manufactured in a new plant at Cheswick, Pa. The new facility has special machinery incorporating the latest design features for efficient high-quality production. Personnel qualified in the design and manufacture of cores and fuel elements for nuclear reactors for power use are now available for advanced engineering assistance and consultation. Inquiries are invited for engineering and manufacture of all types of cores, fuel elements and core components for power and test reactors. Illustrated on right is a mockup of a typical pressurized water reactor core.

COMPLETE INSTRUMENTATION AND CONTROL FOR ALL NUCLEAR PLANTS



Nuclear plant control and instrumentation equipment is the vital link that makes a powerful force of nature an obedient servant. Westinghouse Assembled Switchgear and Devices Department manufactures this equipment for both power and test reactors. Control and instrumentation falls into 4 general classes.

REACTOR POWER CONTROL

The Reactor Power Control Switchboard or control console is the central location where load requirements are evaluated. It contains devices for controlling rod position, rod power supply, pumps, valves, protective systems and auxiliary control.

The reactor is protected against excessive temperatures and pressures, loss of flow, undue rate of change of power and high nuclear level. The Reactor Power Control system takes signals from the other instrumentation systems to maintain control. Static devices (Magamp magnetic amplifiers) are used where automatic control functions are performed.

A rod motor power supply system is shown at the left. Equipment for producing driving power at very low frequency, in the order of 3 cycles per second, occupies much of the space of this assembly. Other assemblies in addition to those shown are required for completing the power supply, protection control and instrumentation requirements.

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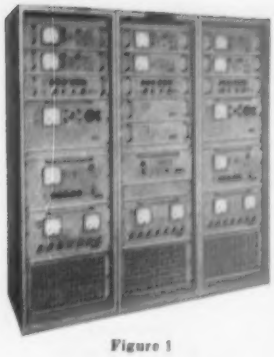


Figure 1

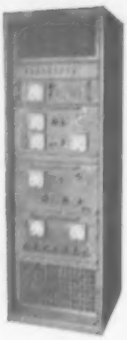


Figure 2

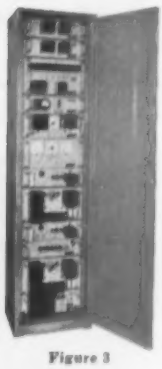


Figure 3

REACTOR COOLANT INSTRUMENTATION

This equipment, and its associated detectors, measures temperatures, pressures, liquid levels, flows, valve positions, and pump heads of the reactor coolant system. This information is utilized to prove indication, and to furnish control signals for the safe and reliable operation of the nuclear power plant. All electronic functions are performed by static devices.

The equipment shown in *Figure 1* is used with a two loop pressurized-water reactor. The outside panels contain the equipment for measurement of the parameters of each loop. Equipment in the center portion generates control and interlock signals common to both loops.

The equipment shown in *Figure 2* controls the primary system pressure of a pressurized-water reactor. To accomplish this function, pressurizer level, pressure, and temperature are measured. Output signals are provided to control pressurizer heaters and relief valves.

REACTOR NUCLEAR INSTRUMENTATION

The Reactor Nuclear Instrumentation Equipment shown in *Figure 3* provides control, indication and safety signals for the startup and power producing ranges of the reactor operation. Control functions in the power producing range are performed by static devices.

Associated with this equipment are neutron detectors located around the reactor vessel. These detectors provide inputs to the equipment proportional to neutron flux leakage from the reactor core. This flux, which is proportional to reactor power, increases by a factor of 10 as the reactor level is brought up to full power from shutdown source level.

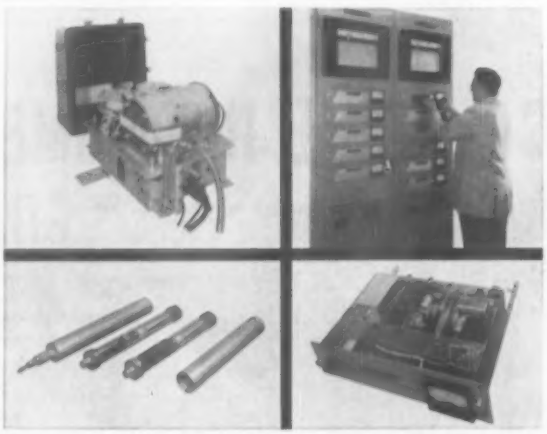
RADIATION MONITORING EQUIPMENT

Equipment has been perfected to keep watch over the plant area, its components and their waste products, by providing detection, indication, recording and alarm.

An area monitoring central panel is shown at the upper right. Each of the channel shown includes a detector, pre-amplifier, computer, calibrator and power supply. At the lower right is a drawer assembly for a gamma-channel.

On the upper left is an air particle detector; the one lower on the left shows gamma radiation detectors. Some of the typical channels available are:

1. Air particle detector (beta-gamma detector).
2. Boiler leak detector (gamma detector).
3. High sensitivity area detector (gamma detector).
4. Medium-high sensitivity area monitor detector (gamma detector).
5. Low sensitivity area monitor (gamma detector).
6. Radioactive gas detector.
7. Neutron detector.



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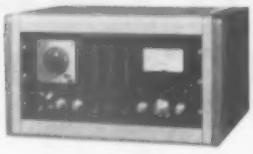


Model 200-I

Preset Time • Electrically Reset Register • Non-Overloading linear Amplifier • Scale of 1000 or 512 • Input Sensitivity: 1 millivolt • High Voltage: 500 to 2500 volts, or 500 to 5000 volts with 1% regulation.

Model 200S—INPUT SENSITIVITY: Continuously adjustable from 0.1 to 3 volts negative or positive pulse • HIGH VOLTAGE SUPPLY: Is continuously adjustable from 500 to 1500 volts • With .002% regulation • SCALE: 1000 • RESOLVING TIME: less than 5 microseconds • Preset Time.

Model 206—Non-overloading linear amplifier • Input sensitivity: 1 millivolt • Resolving time: 5 microseconds to pulse pairs • High voltage ranges: 500 to 2500 volts, or 500 to 5000 volts, .002% regulation • Preset count • Preset time • Pulse Generator.

Model 210—A fast all purpose scaler with a maximum resolving time of 0.8 μ sec • Designed to operate in conjunction with all types of laboratory equipment delivering either a positive or negative pulse • Preset time • Preset count • Precision regulated high voltage supply.

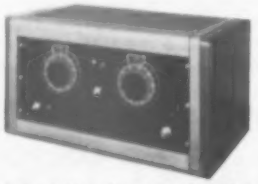
HIGH VOLTAGE SUPPLY

Model 212—Features long term stability, low output impedance, superior transient response and very low noise. Exact high voltage settings are made possible with the vernier range of 0 to 90 volts. A ten turn Helipot insures the precision settings. Positive or negative 500 to 1800 V with 2 MV regulation and extremely good long term stability.

MERCURY PULSE GENERATOR

Model M-60—Fast rise times, various exponential decays, range of 100 microvolts to 100 volts negative or positive pulses • Rise time better than 5×10^{-8} seconds • Variable over a range of 1000:1 • Decay time constant . . . 1, 2, 10 or 100 microseconds • 10 turn Helipot Pulse height selection • Extremely stable.

SINGLE CHANNEL DIFFERENTIAL PULSE HEIGHT ANALYZER



Model 114-A—Provision for plugging in the RIDL Model 118 Electronic Sweep and Count Rate Computer so that the whole spectrum or any part of it may be scanned and recorded automatically • Negative output • Rise Time: Approximately 0.2 microseconds • RESOLVING TIME: Approximately 0.5 microseconds • Stability of Window Width: Better than 1% for all settings of the low discriminator.

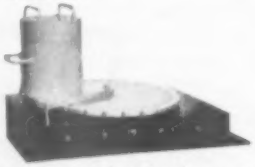
Model 114-B—Same as 114-A except that it has a non-overloading amplifier.

Write for descriptive literature on all products to:

SCINTILLATION PULSE AMPLIFIER

Model A-261—Is RIDL's version of the Argone A-61 amplifier. Designed specifically for scintillation spectroscopy this amplifier exhibits all of the characteristics which are necessary to achieve reproducible results when working over wide ranges in energy and counting rate. Excellent Gain Stability, Overload Response, Linearity • Freedom from base line shifts • Large Dynamic Range • Triple Voltage Regulation • Mercury Pulse Generator.

AUTOMATIC SAMPLE CHANGER



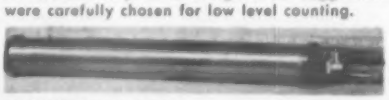
Model S-24—Accommodates 25 samples • Each sample locks directly under counter • Sample identified by number • Sample container size 1" diameter by 5/16 high • Time for each sample automatically printed on tape • Accommodates all types of counters (all use same shield—L12).

COUNTING RATE METER

Model 511—ACCURACY: 1% on a good recorder; within 3% of full scale on the 4" panel meter • RANGES: 200 to 2 x 10 CPM • 2.0, 0.6 or 0.2% Percent Standard Deviation • Positive or negative pulses • RESOLVING TIME: Approximately 2 microseconds.

COUNTERS FOR SPECIAL USES

LOW-LEVEL INTERNAL GAS COUNTER—**Model 19** for tritium and carbon is a commercial version of the counter designed and used by Professor W. F. Libby. It is designed for ruggedness and the materials were carefully chosen for low level counting.



AC RING COUNTER—**Model 18** is a single annular counter with multiple anodes providing complete coverage in cylindrical form around the sample counters.

SCINTILLATION COUNTER—**Model 43-A** is a sensitive all purpose scintillation counter for alpha, beta, gamma counting.

4 PI FLOW COUNTER—**Model 15**—Is similar to the Chalk River Design except we have added a cathode follower. Total activity is counted since the sample is enclosed in a sphere. Special efficiency corrections are unnecessary even though the sample produces coincident radiation as in the case of positron emitters or isotopes with internally converted gamma rays.

The problem of backscattering is largely eliminated. Counter efficiency makes it possible to use thin samples thus cutting down self-absorption losses. Coincident secondary radiation will not affect the count; therefore, positron emitters and isotopes with internally converted gamma rays can be counted without special correction.

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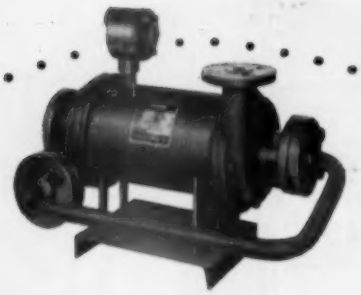

Series DE *Chempump*

Series E *Chempump*

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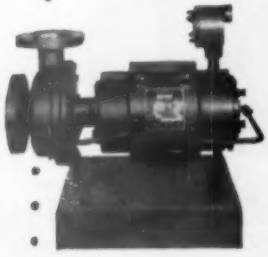
for zero leakage canned pumping!



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See: Nuclear Power Engineering by Henry C. Schwenk, Henry Pratt Company, and Robert H. Shannon, United Engineers & Constructors, Inc. 344 pages, 131 ill., McGraw-Hill; 1957

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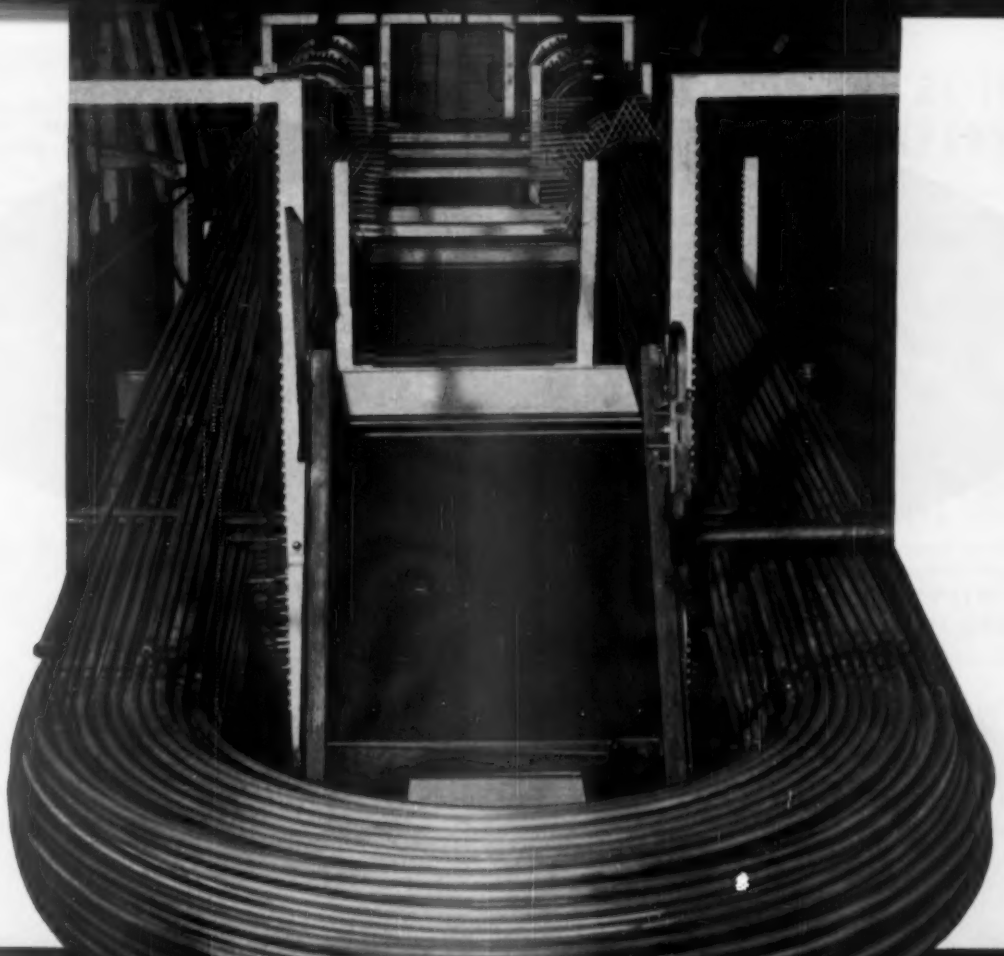

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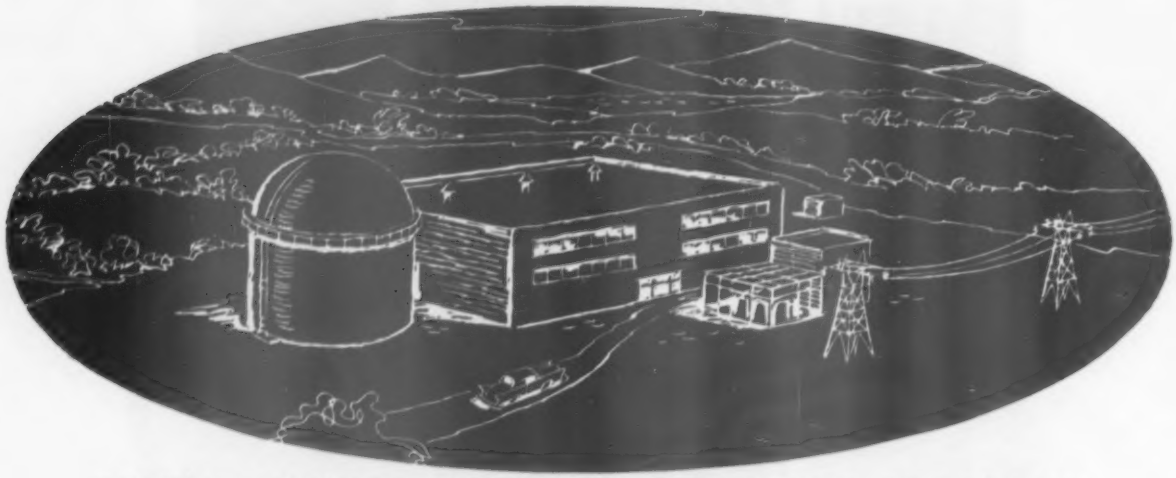

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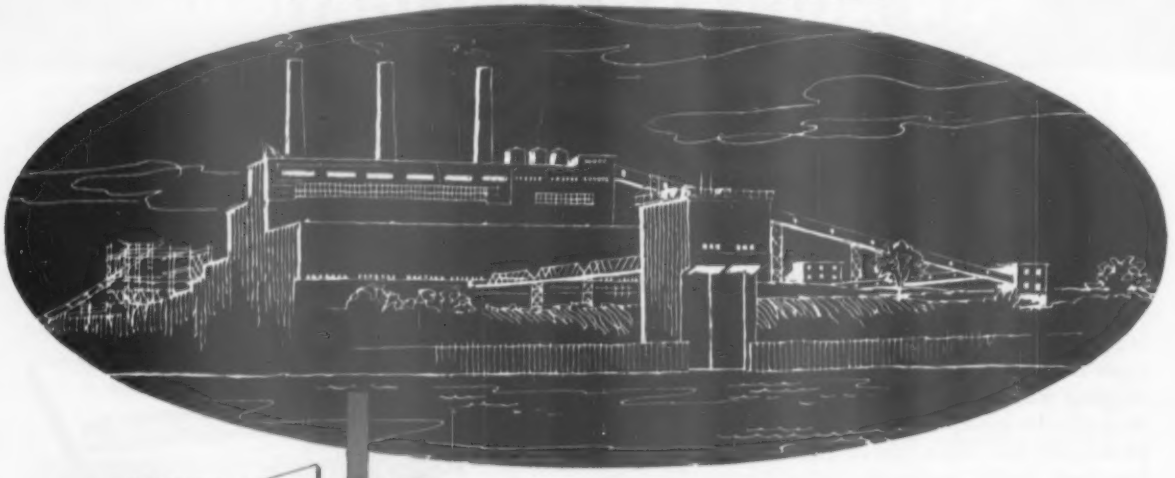

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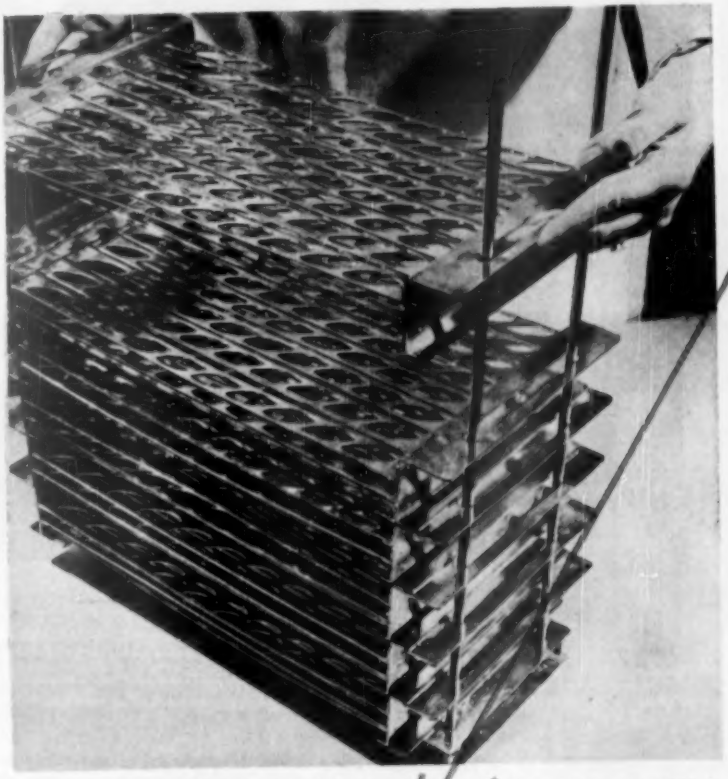

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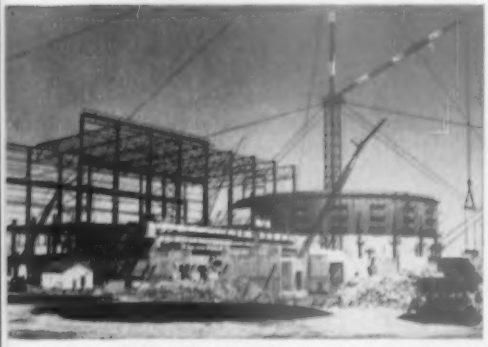
ATOMIC POWER EQUIPMENT DEPARTMENT

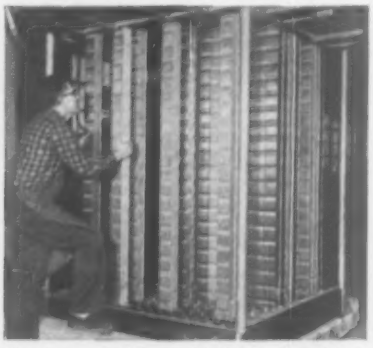
PRODUCTS

REACTOR SYSTEMS—General Electric designs, develops and manufactures nuclear reactors for power, research, test and special applications. Among current projects are the 180,000-kw reactor for the Commonwealth Edison Dresden Station, two 12,500-kw reactors for Ebasco Services, pool-type research reactors for Spain, Argentina and Venezuela, and special reactor feasibility studies.

The Atomic Power Equipment Department in San Jose, Calif., centralizes all General Electric efforts in commercial atomic energy. Engineering and Manufacturing facilities are supported by the Department's Vallecitos Atomic Laboratory.



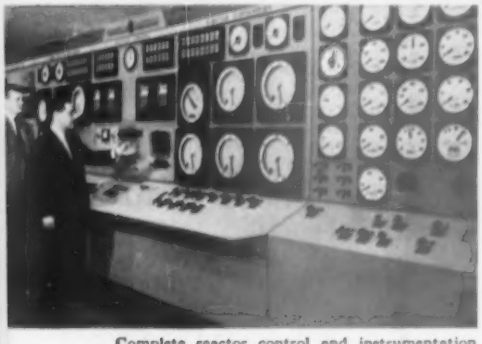
General Electric designed and is constructing this country's largest atomic power reactor for the 180,000-kw Dresden nuclear power station, which will furnish electricity to Chicago area by 1960.



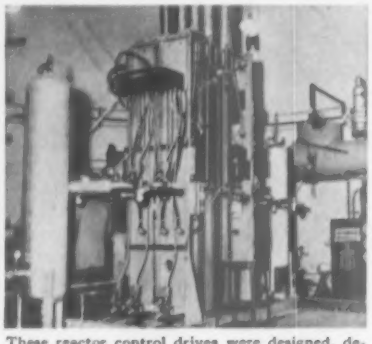
Reactor core grid is assembled at San Jose before shipment to Boiling Water Reactor site at G-E Vallecitos Atomic Laboratory. Reactor went critical in August, will produce power this year.

A new concept in test reactors, the General Electric Test Reactor is now available at 30 and 50 megawatts. GETR combines high power of tank-type reactor with space of pool-type reactor.

REACTOR SUB-SYSTEMS AND ACCESSORIES—General Electric can supply equipment and services for reactor systems in the fields of instrumentation, control, control drives, reactor service, liquid metal pumping and purification, and fuel fabrication. Complete systems as well as individual equipments are designed and manufactured by the Atomic Power Equipment Department. General Electric manufactures standard equipments to existing specifications and also undertakes development projects in these areas.



Complete reactor control and instrumentation systems are fabricated and assembled by General Electric. This control system was built for Vallecitos Developmental Boiling Water Reactor.



These reactor control drives were designed, developed, manufactured and tested at G-E San Jose plant. Equipment is being used in the Boiling Water Reactor at Vallecitos Atomic Laboratory.

Typical of General Electric's new developments in nuclear equipment, the G-E micromicroammeter gives rapid, accurate measurement for small amounts of power in various reactor control systems.

SERVICES

ENGINEERING AND APPLIED RESEARCH SERVICES—In the field of design and development of nuclear systems and equipment, General Electric is offering complete engineering, scoping, design and development services. Services may be contracted for in metallurgical research and development of nuclear fuels, irradiation and study of reactor equipment and materials, analysis of uranium and radioisotopes and other areas of applied research and development.

Nuclear Test Reactor, located at Vallecitos, was designed and built by General Electric for studies in general physics. Irradiation space in the NTR and GETR will be available to customers.

Operating conditions of boiling water reactors are simulated in 56-foot-high tank to test refueling equipment. Tank is used here to demonstrate equipment for customer-operators course.

Development of materials and manufacturing techniques for nuclear fuels is conducted in fuel development laboratory. Facilities and services are available for development contracts.

For more information on these products and services contact your nearest General Electric Apparatus Sales Office, or write to the Atomic Power Equipment Department, General Electric Company, San Jose, California.

ATOMIC POWER EQUIPMENT DEPARTMENT

FACILITIES

THE ATOMIC POWER EQUIPMENT DEPARTMENT is located in San Jose, Calif., and includes complete engineering, administrative, testing and manufacturing facilities. The Vallecitos Atomic Laboratory, the Department's research and development facility, is located 20 miles from San Jose. The Department undertakes standard and developmental projects for complete reactor systems, sub-systems, and accessory equipment.

Main Offices (1) house executive, engineering, marketing and administrative personnel.

General Manufacturing facilities (2) are equipped to fabricate and assemble components and equipment for power, research, test and special reactors.

Engineering test building (3) contains various test loops and facilities to test equipment design and performance under simulated reactor conditions.

Fuel development and manufacturing facilities (4) include specialized equipment for manufacturing fuel elements.

General Electric's fuel manufacturing facilities contain complete sintering operation for production of uranium dioxide pellets and fabrication of flat-plate and rod-type fuel elements.

Actual equipment tests are now being performed here for both power and research reactor projects. Tests include control rod drive performance and fuel plate heat transfer and fluid flow.

Manufacture and assembly of reactor equipment, such as coolant and control drive systems, reactor cores, and components, is carried out in this manufacturing area.

GENERAL ELECTRIC VALLECITOS ATOMIC LABORATORY is a vital part of the Atomic Power Equipment Department. Scientists and engineers at Vallecitos are using advanced research and development facilities to support the Department's manufacturing operations. Facilities at Vallecitos, which is the largest, privately financed atomic laboratory, are available for applied research and development contracts.

Radioactive Materials Laboratory (1) is used to study effects of irradiation on reactor fuels, components and structural materials.

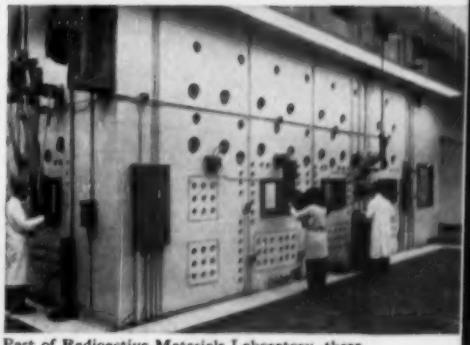
Experimental Physics Laboratory (2) contains a critical assembly, Nuclear Test Reactor, and various computers.

Developmental Boiling Water Reactor (3) is to be used to develop research data on power reactor systems.

General Electric Test Reactor (not shown), to be completed in 1958, will be important irradiation test facility. Experimental space in this reactor will be available to customers under contract.

Designed and built by General Electric, developmental Boiling Water Reactor will furnish steam to 5000-kw turbine-generator owned and operated by Pacific Gas and Electric Company.

Critical assembly is used to mock-up large power reactor cores and study core configurations and fuel loadings. Developmental work will help prove design feasibility for future reactors.



Part of Radioactive Materials Laboratory, these hot cells are used to perform chemical and metallurgical analyses on irradiated materials. Facility and services are available to customers.

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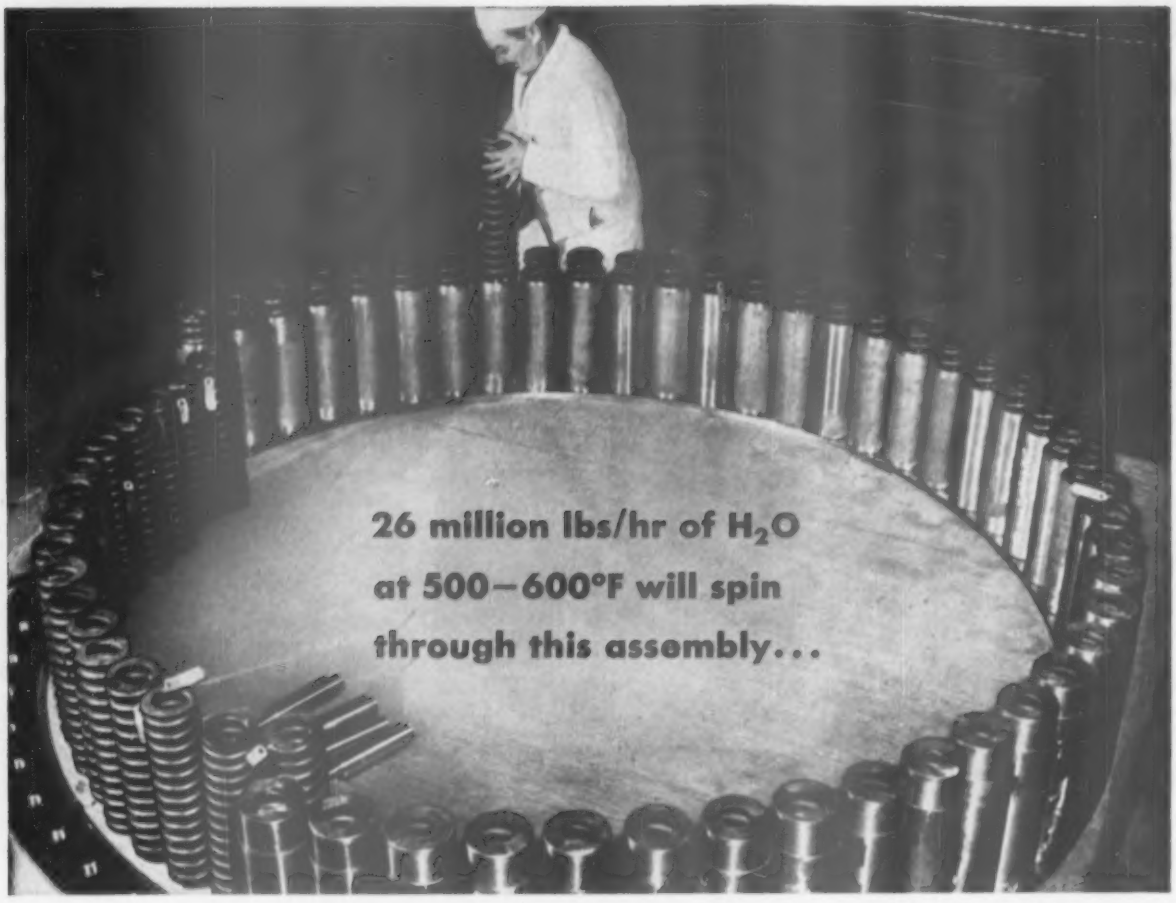
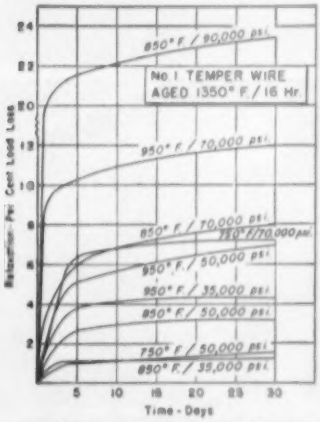


Photo courtesy of Combustion Engineering Inc.

How Inconel "X" is used in Shippingport reactor to make sure core mount springs stand up

Superheated high-purity water makes many ordinary spring materials relax quickly. It may cause them to fail by stress-corrosion cracking or embrittlement.


No. 1 TEMPER WIRE
AGED 1350° F. / 16 Hr
850° F / 90,000 psi
950° F / 70,000 psi
850° F / 70,000 psi
750° F / 70,000 psi
950° F / 50,000 psi
950° F / 35,000 psi
850° F / 50,000 psi
750° F / 50,000 psi
850° F / 35,000 psi
Relaxation - Per Cent Load Loss
Time - Days

relaxation of Inconel "X" springs made from No. 1 temper wire.

An outstanding exception is Inconel "X"* age-hardenable nickel-chromium alloy. Springs of this alloy resist both corrosion and heat . . . up to 1100°F in certain applications.

Here are some relaxation curves, for example, which show what stresses Inconel "X" alloy is capable of handling at various temperature levels.

The curves speak for Inconel "X"* alloy. When you want springs that resist relaxation at high temperatures this is the alloy to use . . . just as Combustion Engineering Inc. has done in spring mounting the core of this reactor, in a plant designed by Westinghouse Electric Corp. for operation by Duquesne Light Co.

Inconel "X" gives you valuable bonus properties too

Inconel "X" alloy also offers you (1) excellent corrosion resistance (2) outstanding hardness and wear resistance (3) high fatigue strength (4) high tensile strength (5) low thermal expansion (6) resistance to stress-corrosion cracking.

These are just the properties that are so often needed in high-pressure, high-temperature nuclear equipment. You may know Inconel "X" and other Inco high-temperature alloys very well indeed. But if you don't, Inco's 79-page "Inconel 'X' " and 35-page Bulletin T-35 "Inco Nickel Alloy Helical Springs" are two helpful booklets. Write for copies. *Registered trademark

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Inconel "X" . . . *for durable spring properties at high temperatures*

NUCLEONICS NOVEMBER, 1957

Jerome D. Luntz, *Editor*

Atoms for Power: U. S. Policy in Atomic Energy Development

EDITOR'S NOTE: *This is the final report of the 12th American Assembly held at Arden House, Harriman, N. Y., Oct. 17–20. Because it pertains to the central issue in atomic energy today—what needs to be done to enhance our program—we are publishing it here in its entirety.*

The Assembly is an activity of Columbia University. It brings together about 60 people from many occupations to discuss major problems confronting the U. S. The participants in the atomic energy discussion are listed on p. 186.

PREAMBLE

The United States has attained a worldwide reputation for preeminence in science and technology. Whether we like it or not, the maintenance of the United States' position in the image already fashioned is a factor in the present world struggle. In such a situation the position of the United States is inescapably competitive.

The United States' policy in atomic power development must, for this and other reasons, be appraised not only in domestic but also in international terms. Conclusions reached by weighing our existing national fuel resources and needs and present costs of power produced by nuclear reactors may need to be modified by foreign policy considerations.

The importance for society of the development of peaceful uses of atomic energy is widely felt but inadequately understood. Not surprisingly, so far as the near future is concerned, the immediate and universal use of atomic power has been oversold. Ultimate possibilities both in the United States and more especially in the world at large have been mistaken for present realities. Disappointments are inevitable.

This situation already has had consequences of national and international importance. The national consequences, in terms of dissatisfaction with governmental actions and policies, may not in the long run prove to be significantly damaging. They may not, for example, materially affect the ultimate progress of scientific research or of applied technology in the United States. On the international plane, in the present position of the United States as a world power involved in the constant competition of cold war, disappointments may have harmful results which, while perhaps unjustified, are none the less real.

Nor is it possible to divorce considerations of United States atomic power policies from problems of national defense and accumulation of atomic weapons in the arsenals of this and of other countries. The dispersion of atomic power reactors throughout the world is inevitable. The consequence will be that many states will have available atomic weapons material. The dangers of diversions to weapons use will then be multiplied unless in the meantime adequate international safeguards are devised and effectively employed.

It is imperative that comprehensive and continuing study be devoted to the present and future impacts of the Atomic Age. Such study may range from the beneficial uses of radioisotopes to the ultimate tragedy of thermonuclear war. The whole subject is far too vast for consideration by any one group in any single conference. This report relates to one particular problem: the utilization of atomic energy for the production of power. Its focus is upon the United States and the policies which the United States should adopt.

FINDINGS AND RECOMMENDATIONS

Power resources and needs in the United States. Although there are some regions such as New England, Florida, and parts of the West Coast which, in United States terms, are relatively high-cost fuel areas, the United States, unlike many other countries, has today, and will have for some years to come, plentiful low-cost fuel supplies. The United States has therefore not been impelled by immediate need for a new source of fuel for power to press forward with the development of the production of atomic power on an urgent basis. Our atomic energy pro-

Continued on p. 186

Painted especially for NUCLEONICS by Jack Heaney

Savannah is the name many groups are urging for America's first nuclear merchant ship, commemorating a U. S. first of another day: first steam-powered ship to cross Atlantic, in 1819

Nuclear Merchant Ships

A NUCLEONICS Special Report

To sail the seas free of ties to the shore—this age-old dream of man's the U. S. Navy has virtually realized with *Nautilus* and her sister nuclear submarines. One question immediately posed by *Nautilus'* success was whether this new source of propulsive power could bring its advantages to merchant fleets at competitive cost.

In an effort to assure an affirmative reply, the U. S. government as long ago as November 1955 embarked on a two-phase program.* Phase 1 involves construction, as soon as possible, of a prototype nuclear-propelled merchant vessel. Phase 2 is aimed at developing an advanced-type, economic nuclear propulsion unit for merchant ships. To carry out this program, a joint AEC–Maritime Administration group was set up with dual identity (its members serve in both agencies) under Richard P. Godwin.

1. First U. S. Ship Nears the Ways

Phase 1 was delayed for a year by a disagreement in Congress: President Eisenhower had asked in April 1955 for immediate construction of an atomic "peace ship" to tour the world carrying exhibits of American achievements in harnessing the atom for peaceful uses. Congress eventually decided, in mid-1956, that to build an A-ship immediately with a carbon copy of the *Nautilus* reactor would do nothing for the American merchant marine, and that the propaganda purpose served alone by such a ship was not worth the cost. It therefore authorized construction of a mixed passenger-cargo ship powered by a reactor based on existing technology but embodying the greatest advances possible, and specially designed for merchant service rather than military application. This is the ship described in the first article.

2. Advanced Ship Reactors

Meanwhile the Phase 2 study was underway with the carrying out of six 6-month studies on advanced ship-propulsion reactors by Atomics International (on organic moderated reactors), AMF Atomics (boiling water), Babcock & Wilcox (advanced pressurized water), Ford Instrument Co., General Atomic, and General Motors (gas-cooled). Most recently, 18 companies have replied to the AEC-MA invitation to bid on developing a closed-cycle gas-cooled reactor-and-turbine system (see p. 21). The phase 2 program is described in the second article.

3. World-Wide Efforts

These first two articles are based, together with additional material assembled by NUCLEONICS, on reports presented at a symposium for the shipping industry sponsored by the joint AEC-MA group to acquaint the industry with the nuclear merchant ship program.

Finally, NUCLEONICS correspondents abroad were asked to report on progress in the principal countries active in this field—Britain, France, West Germany, Holland, Norway, Sweden, Japan and the Soviet Union.

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* NU, Dec. '55, 12; April '56, 17; July, R10; Aug., R1, R9: Nov., R2; May '57, 21; Sept. '57, 30.

1. First U. S. Ship Nears the Ways

ALTHOUGH the first U. S. atomic merchant ship, whose keel is scheduled to be laid in March, will be the world's third nuclear-propelled surface ship (well behind the Russians' 16,000-ton icebreaker *Lenin* and close behind the Navy's 14,000-ton, two-reactor cruiser *Long Beach*)—and only about the 15th nuclear vessel if submarines are included—she will hold one important first. She will surely boast the world's first entirely unclassified seagoing nuclear power plant—and for this reason the eyes of the world's nuclear and shipping people are already upon her.

As yet unnamed, the ship will probably be the subject of a White House decision when it comes time to select her name, for the President's interest in the project has been great, and he takes personal credit for the original idea of a nuclear exhibit "peace ship." Meanwhile her builders are more concerned with the preliminaries necessary to translating blueprints into a keel and frames on the building ways. A shipyard will have been selected to build her by the time this appears; it will probably be Ingalls Shipbuilding Co. at Pascagoula, Miss., on the Gulf, or New York Shipbuilding Co. at Camden, N. J.

Triple Guinea Pig

The ship will have three lives—and each one a guinea pig: three times she will be called on to break the ice for all the nuclear merchantmen to follow. First, she will undergo a considerably longer trial period than most ships, during which time the AEC will study how her reactor works, what it can do and what it can't do. During this time—in accordance with an "atoms-for-peace" directive laid down by the President himself—her propulsion plant will be available for nuclear engineers of all friendly lands to see, although the ship will not serve as the itinerant exhibit vessel first proposed. Then AEC will phase out, and a second testing period will begin with the ship operated in overseas service by the Maritime Administration. She will carry relief, Point Four, CARE, or other governmental or semigovernmental cargoes—"anything we can get," says project chief Godwin—in and out of domestic and foreign ports, setting all the necessary precedents and probing out all the regulatory pitfalls that await a nuclear merchant ship in the realms of port entry and clearance, health and safety control, water and food supply, waste disposal, shore maintenance, insurance, marine law, labor, etc. When the ship has accomplished her second task, achieving acceptance for atomic ships in foreign commerce, Maritime will in turn phase out; and the ship will be chartered, after competitive bidding, to a private ship operator to try her mettle in regular competitive commercial passenger and cargo service.

Cost of the ship will be $39-million, of which $21-million is the AEC share for the propulsion plant, $18-million the Maritime share for the ship. This is a total program cost including not only the physical ship but also research and development, ship operation, crew training, carrying out of studies etc. Naval architect is the New York firm of George G. Sharp Inc., which engaged Walter Kidde Nuclear Laboratories for technical help on shielding, containment, and other nuclear aspects. Bab-

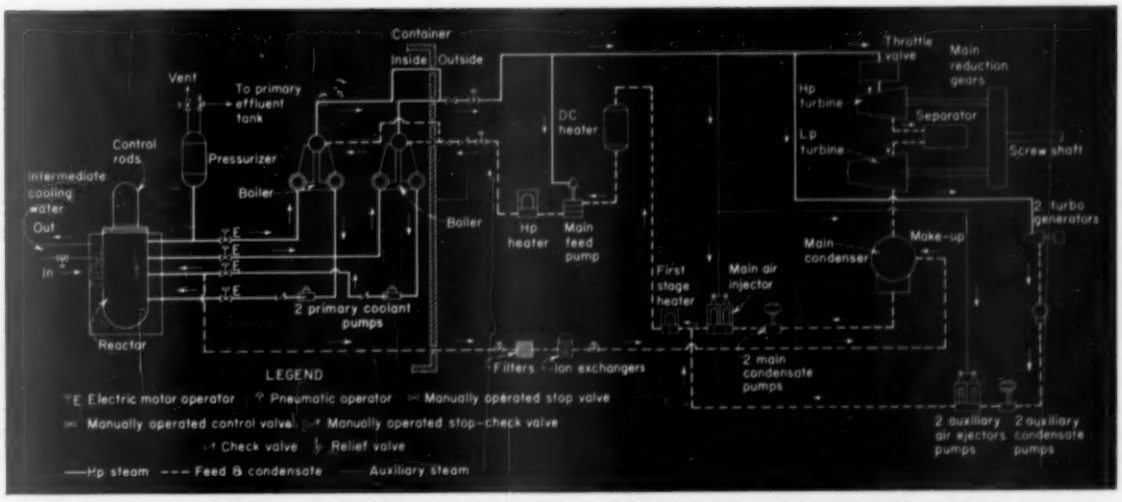


FIG. 1. Flow diagram for first U. S. nuclear merchant ship shows pressurized water reactor feeding two steam generator loops, which power two-stage turbine

cock & Wilcox was awarded a $9,872,000 contract in April to design and build the reactor and rotating machinery; it subcontracted with DeLaval Steam Turbine Co. for supply of main turbines, main reduction gears, turbine generators, main and auxiliary condensers, feedwater heaters and pumps.

The single-screw ship will displace 11,650 tons with her 588-ft length, 78-ft beam, 31.5-ft draft. To be manned by a crew of 130, she will carry 9,340 tons of cargo and 60–100 passengers depending on how much of the fixed-budget funds are left over from construction for outfitting cabins. Her design speed is 21 knots, her normal shaft horsepower 20,000 and maximum 22,000, her cruising radius 350,000 miles—almost 30 times that of a conventional ship of equivalent size and power. She will have three complete decks, four forward and three after cargo holds. The superstructure will consist of a promenade deck above A deck extending ⅓ the ship's length from a point slightly forward of amidships (here will be the public rooms including main lounge, library, writing and card rooms, bar dance area, cocktail lounge and open-air swimming pool), and shorter boat and navigating bridge decks. The hull is divided by ten watertight transverse bulkheads.

The reactor compartment is exactly amidships for best stability and cargo-hold arrangement, which resulted in the superstructure being placed aft of amidships so as to minimize the height of the reactor hatch through which core reloading operations must take place.

In the reactor compartment, but not taking up its full length (see Fig. 3), will be a containment vessel of carbon steel, 31 ft in diameter and 51 ft long, 2⅜ in. thick in the cylindrical section, 1¾₁₆ in. at the hemispherical ends. Designed to take a pressure of 186 psi, it can withstand a complete rupture of the primary coolant system. Collision mats to protect the reactor in an *Andrea Doria*-type accident are provided on either side of the containment vessel, built up from alternate layers of 1-in. steel plate and 3-in. redwood planks; they are also part of the shielding. The containment vessel weighs 210 tons; the machinery components 600; foundations, supports and special weight-distributing members 220 tons. Studies are continuing on the design of the containment vessel, and marked improvements are expected as the design develops. (Indeed, the ship's builders feel a containment vessel may not be needed in future ships after operating reliability has been demonstrated.)

Inside the containment vessel will be the reactor and entire primary system including the two main steam generators, four main circulating pumps, pressurizer and other auxiliaries.

The Reactor

The reactor pressure vessel, of SA-212 carbon steel lined inside with stainless, will be 8 ft 2 in. i.d. with a hemispherical bottom head welded to the shell and a spherical dished top head attached by bolts through a flange, which then will be sealed with a double gasket and a seal weld. Around the vessel will be: a 3-in. insulating jacket of stainless-steel wool, a primary shield of 33 in. of water in an annular tank plus 3 in. of lead, and a thermal shield of a number of steel plates in the outer reflecting water annulus of 15 in. total water and steel. The vessel and shield tank supports will be anchored to the ship's structure through the containment vessel walls.

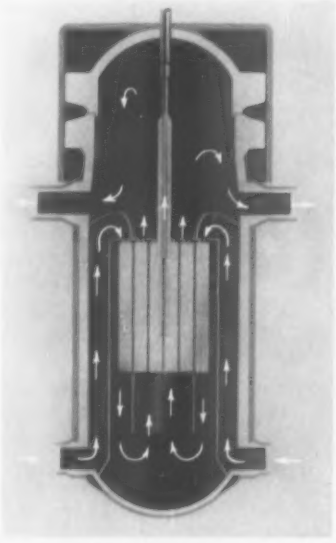


FIG. 2. Three-pass reactor vessel for first merchant ship was ordered in August, is now being fabricated at Babcock & Wilcox's Barberton works, and is to be delivered about Jan. 1

Coolant water will enter the vessel through two 14-in.-i.d. nozzles at 495° F and leave after three passes at 521° F. Operating temperature will never exceed 530° F (except in the pressurizer); operating pressure will be 1,750 psi, maintained at all loads to prevent local boiling; but all primary loop parts are designed for 2,000 psi.

The type of reactor core chosen embodies a number of distinct advantages over any previous marine reactor say its designers, Babcock & Wilcox Co.:

- Use of rods filled with UO_2 of low (3.6%) enrichment yields an extremely rugged core, less susceptible to distortion of flow channels and burnout than a plate-type core.
- The oxide being almost completely inert to water, a fuel-element defect produces no serious corrosion or chemical reaction that would cause shutdown. The possible presence of fission products in the primary due to such a defect is designed for as a normal operating condition.
- The low-enriched oxide insures greater fuel economy than a fully-enriched core using metallic elements, because of the long life and the small production of excess plutonium in such a core.
- In a large, long-life core, average neutron flux and corresponding maximum surface temperature is held down, insuring better core operating conditions and reliability.
- The ultimate potential of this core type offers many lines of future development in which further economics can be achieved, making it promising for marine use.

The first core as now contemplated will consist of an assembly of 32 fuel elements each containing 200 stainless steel rods ½-in. dia filled with 3.6% enriched UO_2. Each element will be ~8.8 in. square by ~90 in. length between grid plates. They will be closely-spaced in a cylinder 5½ ft dia. Excess reactivity will be controlled by 21 control rods, 20 of them shim rods. The centrally located rod may be designed for fine control, and would then be connected to a programming and servo system for automatic fine control of small changes in reactivity and power demand.

Core lifetime is estimated at 52,300 Mwd, which at expected operating conditions will allow 3½ years between refuelings. Maximum continuous reactor power is 85 Mw(th); reactor power for 22,000 shaft horsepower is 72 Mw, for 20,000 shp (normal), 64 Mw. The reactor will be sufficiently shielded to permit entry into the containment vessel for routine main-

tenance 2 hr after shutdown from normal operation.

The reactor compartment length of 60 ft plus engine-room length of 55 ft is longer than the 70 ft machinery length of a conventional ship; however this is compensated for by provision of stores spaces outboard of the containment vessel in the reactor compartment; on this basis there is little difference. The light weights of two comparative ships are nearly equal, excluding the reactor, containment vessel and shielding. Weight of these items is nearly equal to the weight of fuel oil on departure for the conventional ship. A conventional ship fueled to steam its maximum cruising radius, 13,000 mi, has a cargo deadweight capacity 600 tons (6.6%) less than the nuclear ship. At 15,000 mi radius, the cargo deadweights are equal in departure condition. For shorter distances the conventional ship shows to advantage.

Two natural-circulation boilers will generate the steam required by the turbines at any load with a constant primary-water mean temperature of 508° F. Design pressure will be 2,000 psi on the tube side, 800 psi on the shell side. Each boiler will consist of a U-shell encasing a bundle of U-tubes. The primary water enters one end of the U-shell, passes through the tubes, and discharges from the other end of the shell; the steam generated outside the tubes goes up through risers to a steam drum where cyclone separators and steam scrubbers separate out moisture before it is passed to the turbine. This consists of a high-pressure and a low-pressure geared turbine unit, with power to be divided approximately equally between the two stages at full power. Over-all thermal efficiency is comparable to that of a conventional ship of same power and type, the apparent disadvantage of the low steam conditions being offset by the efficiency of the reactor steam generator as compared with an oil-fired boiler.

Auxiliary electric power and steam requirements are normally provided by two geared steam turbogenerator sets and one low-pressure steam generator, both getting their steam from the main steam generators. The reactor and main and auxiliary machinery are all normally controlled from an enclosed and air-conditioned central control station above the engine room, from which they can be operated by remote control.

In Emergency

Two diesel-powered generators furnish standby power in case of failure of the turbogenerators, and emergency power for reactor cooling, ship's services, and driving a 750-hp propulsion motor that can take the ship to port at 6 knots. The diesels also furnish power for cold start of the reactor plant. There is also a diesel-oil-fired package boiler for supplying steam for ship's services when the low-pressure steam generator, which normally fills this function using reactor steam, is shut down. Finally, there is a diesel-powered emergency generator topside to provide emergency power.

This is in conformity with the safety philosophy that governed design of this ship: that if the reactor is shut down for any reason, at least two sources of power shall be available to remove its decay heat. Other departures from usual nuclear safety principles applied to date are that operation of the plant, even at full power, shall not be impaired by failure of any fuel elements; and that no operation or failure of the reactor plant at sea shall require any of the crew to enter the reactor compartment, or be overexposed to radiation, to bring the ship home.

"I think we are building a safer ship than any ever built," declares Godwin.

Design of the ship was frozen Sept. 8, holding to the 39-month development and construction schedule (shortest ever undertaken for a major U. S. reactor project). Godwin frankly says she will not be economic to build or operate, although she will carry more cargo than a conventional ship of equivalent tonnage. But her $12-million power plant could be built today for $9-million, he says; "estimated costs are dropping rapidly, prior to any attempt at simplification, standardization or mass production." Once that is done, A-ships will be truly competitive.

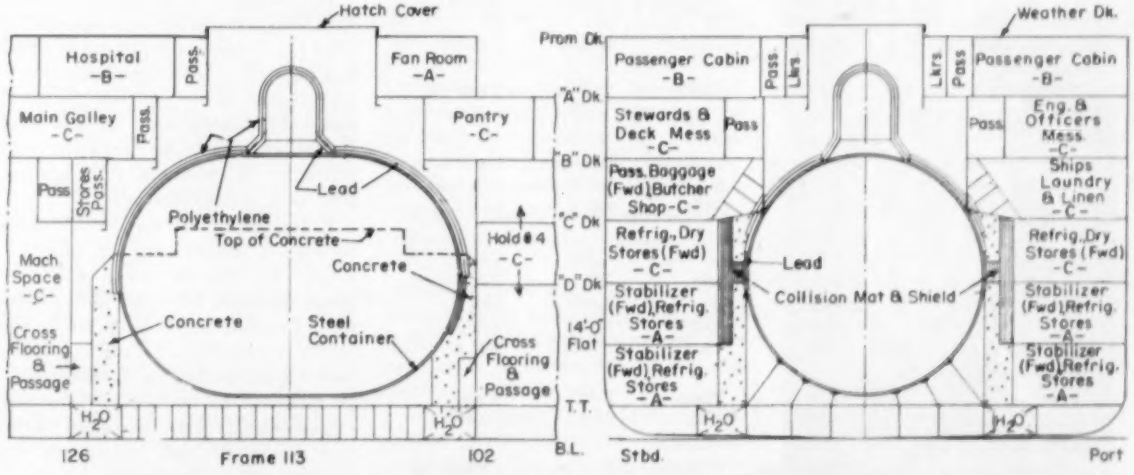
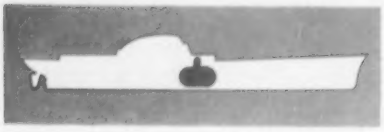


FIG. 3. Cross-sections of containment vessel (elevation at ship's center-line, left, and section amidships, right) show how reactor is shielded from crew and passengers. Between steel container and 48 in. of concrete surrounding it are layers of lead (varying from 4 to 6.5 in.) and of polyethylene (from 4 to 6.6 in.). Total shielding materials are 521 tons lead, 44 tons polyethylene, 676 tons concrete, plus 198 tons water in inner bottom and 175 tons steel and wood in collision shield. Radiation dosages to ship's living spaces surrounding reactor compartment are as follows: -A- = 1 rem/wk; -B- = 0.5 rem/yr; -C- = 5 rem/yr—well below acceptable tolerance levels



2. Advanced Ship Reactors

Six U. S. reactor designers studied four advanced reactor concepts for merchant ship propulsion in the second phase of the AEC–Maritime Administration program. Here's a summary of their design efforts

1. Pressurized Water—Babcock and Wilcox

The Babcock & Wilcox study involves continued work on the pressurized-water reactor concept. At present, this reactor type is relatively expensive to build and operate because of its high pressure and because it produces saturated rather than superheated steam. Offsetting these drawbacks are the facts that considerable work has already been done in developing the pressurized-water reactor and its demonstrated reliability and safety. There is evidence that the cost of pressurized-reactor construction is decreasing, and many improvements look promising.

Among the possible improvements put forth by B & W* are the following:

1. The use of a larger power plant with a higher load factor; a high-power plant of this kind would be suited either to a high-speed passenger vessel or to a supertanker, in the one case for speed and in the other for size. (Power plant weight will not be an overriding consideration in merchant ship applications as it is in submarines.)

2. Increasing the size of fuel rods provides a second route for improvement. In long-life cores with low power densities, the upper limit on size for a UO_2 fuel rod is often set by the center temperature. If melting at the center is acceptable, rod diameter could be increased to the point where heat transfer surface is the only limit. Core cost would diminish roughly as the square of the rod diameter.

3. Improved fabrication techniques

* R. L. Whitelaw, BAW-1022 (Atomic Energy Division, The Babcock & Wilcox Co., Lynchburg, Va., 1957).

Characteristics of Four Second-Phase Reactors

Designer	AMF	AI	GA	GM
Type	Boiling water	Organic moderated	Gas cooled	Gas cooled
Full power (Mw)	74.5	70	55	55
Burnup (Mwd/ton)	21,000	1,435	62,000	150,000
Endurance (full power hours)	7,600	13,500	10,800	4,440
Temp. coef. (10^{-5}/°C)	−11	−12	−1.7	−3
Core				
Configuration	Cylinder	Cylinder	Hexagon	Cylinder
Size (ft)	4.8 × 5	6 × 6	5.6 × 5.5	5 × 6.5
Fuel load (kg U^{235})	160	245	120	54
Coolant				
Inlet flow (10^3 lb/hr)	4,190*	10,000	1,230	294.4
Inlet temp. (°F)	509	580	780	768
Pressure (psig)	900	35	2,000	992
Outlet temp. (°F)	534	622	1,300	1,300
Outlet flow (10^3 lb/hr)	191†	10,000	1,230	294.4
Fuel elements				
Type	Slug	Plate	Rod	Tube
Enrichment (%)	9.5	1.58	28.6	Full
Control rods				
Configuration	Cruciform	Cylinder	Hexagon	Cruciform
Number	16	16	25	21
Composition	B-SS (12) Hf (4)	B-SS	.....	Eu_2O_3-SS

* Feedwater. † Steam.

hold the promise of failure-proof fuel rods that will last the life of the core. This would result in savings in the cost of purification, shielding and other systems insofar as they need to provide for the possibility of fuel rod rupture.

4. The application, particularly for large reactors, of power flattening: for a reactor already designed to its limit in size and heat flux, power flattening can offer as much as a threefold increase in power from the same core.

5. Carbon or low-alloy steel may replace stainless steel in the primary system. This step awaits a better knowledge of the buildup and penetration of activated corrosion products from carbon-steel walls, or finding a low-cost corrosion-resistant alloy.

B & W also believes that there are at least three modified types of pressurized-water reactors that can offer distinct economic advantages over the present type. In one, reactivity control would be provided by "softening" the neutron energy spectrum from a higher to a lower ratio of epithermal to thermal during the life of the core by adding light water to a heavy-water-moderated system (NU, Aug. '57, p. 66). This device would permit longer core lifetimes with higher conversion ratios (mutually incompatible at present) and, at the same time, would eliminate the need for the many shim rods presently required.

A second modification would employ water at supercritical pressures as the coolant. At pressures of ~3,500 psi, the water could be heated in the core, from 650° F to 750° F for example, and emerge as steam without any unique change of phase and with moderating properties comparable with the 508° F pressurized water in present plants. This steam could then be superheated by conventional firing, or by a superheating reactor, and supplied directly to a turbine. The optimum feedwater heating for such a cycle would return the feedwater to the reactor at, or very near, the critical temperature. Such a plant would have the twin virtues of relative simplicity and high thermodynamic efficiency.

A third modification would employ a two-region core, the one being cooled by pressurized water and the other being cooled by steam at a substantially higher temperature. Such a reactor would permit the use of a conventional superheated steam cycle in the ship's propulsion system.

2. Boiling Water—American Machine and Foundry

American Machine & Foundry, as one of four companies with proposals for specific reactor designs, is proposing* a boiling-water reactor plant (see Fig. 1 and table) with a UO_2-ThO_2 fuel mixture in the form of short ceramic cylinders clad with Zircaloy. Long fuel-element life partly compensates for the reprocessing cost of the irradiated fuel, and this, AMF believes, is the path to competitive nuclear power.

The boiling water reactor (BWR) is closely related to the pressurized water reactor in technology, but the BWR appears to represent an advance in terms of simplified design (no pressurizer or heat exchanger), lower capital cost (because of lower pressure), and inherent safety. Now that EBWR and GE's Dresden prototype are in operation, practical operating data on this type reactor should be available soon.

AMF chose the UO_2-ThO_2 ceramic fuel mixture because it is dimensionally stable under irradiation and is inert to chemical attack by degassed water and steam. Moreover, it is completely isotropic during processing and fabrication and undergoes no allotropic phase changes up to the melting point.)

The fuel element consists of a 0.425-in.-o.d. Zircaloy tube filled with fuel slugs. After being evacuated and filled with helium, the tube is sealed by welded end closures, and is assembled, with structural spacer bars, in a rectangular Zircaloy box.

The maximum surface temperature of the cladding is expected to be less than 565° F. The time for initiation of rapid corrosion in Zircaloy at this temperature is probably in excess of 1,600 days, which is much greater than the limit on core life set by burnup. This means that rapid corrosion should not be a factor in determining the cladding integrity of the element.

For a fuel element operating at maximum heat flux and saturated liquid conditions of 900 psig, the center temperature of the fuel slug is expected to be 2,700° F. This offers a margin of at least 2,200° F before the fuel mixture reaches its melting point.

At full power, 74.5 Mw of heat (254×10^6 Btu/hr) will be generated in 5,488 fuel elements (49 in each of 112 fuel assemblies) having a total heat transfer surface of 3050 ft². With maximum-to-average power distribution ratio of 4.1, the maximum heat flux will be 341,000 Btu/hr/ft².

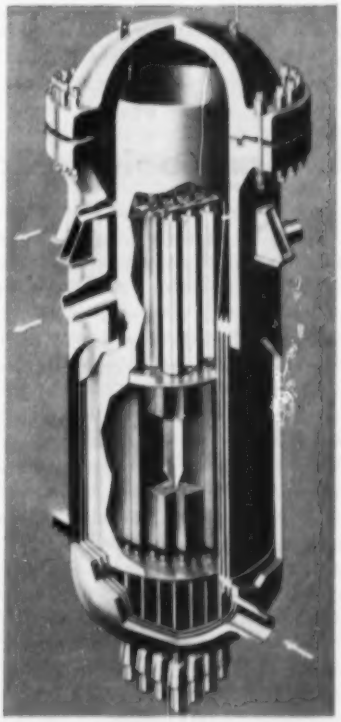


FIG. 1. AMF's boiling water reactor. Control rods are driven up and out of the core by drive mechanisms located below 7-ft i.d., stainless-steel-clad reactor pressure vessel

* M. H. Shackelford (Nuclear Engineering Laboratory, American Machine & Foundry, Greenwich, Conn., 1957).

3. Organic Moderated—Atomics International

Atomics International (AI) says* that the OMR design it is proposing has a number of inherent advantages that enhance the safety and economic desirability of this plant for marine propulsion. Because the moderator is rich in hydrogen the core is compact and, hence, a saving is effected in structural and shielding material. The reactor also has a high negative temperature coefficient (approximately -12×10^{-5}/°C).

The reactor operating pressure is low (35 psig) and, therefore, sealing and gasket problems are relatively minor. The low operating pressure allows the use of thin-walled tanks and piping—important for ease of shipboard repair and maintenance. Also as a result of the low operating pressure, the reactor contains a minimum of stored energy. A ruptured pipe will not cause extensive damage nor release appreciable amounts of radioactivity to the atmosphere.

Heat is removed from the reactor core by means of two parallel cooling loops (see Fig. 2). The coolant, a commercially available hydrocarbon known as mixed isomeric terphenyls, enters the core tank through two inlet pipes, passes up through the fuel elements and (at a decreased flow rate) outside the fuel elements, and leaves the core tank through two outlet pipes.

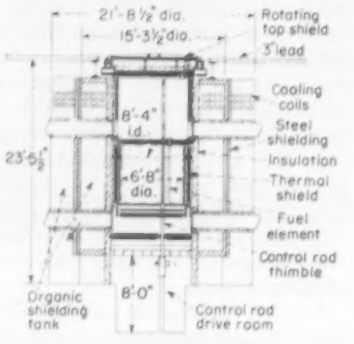


FIG. 2. AI's organic moderated reactor. Core consists of 260 fuel elements and 16 control rods (only one shown). Aluminum fuel elements are enclosed in steel core structure

There are no chemical reactions between the organic coolant and fuel cladding, fuel, or structural materials. Ordinary materials of construction, aluminum and carbon steels, are used throughout. Members of the ship's crew can effect most repairs at sea using standard shipboard repair and maintenance equipment.

The organic coolant becomes only moderately radioactive during operation, hence, after shutdown, the reactor compartment is accessible for limited intervals. Experimental results from operation of an in-pile loop at the MTR indicate that, 15 minutes after reactor shutdown, a crew member can work in the compartment for several hours.

The fuel element consists of 11 plates, each is 0.1 in. thick, 2.50 in. wide, and 72 in. long. The spacing of the plates within the element is not uniform. It increases successively from the center outward to increase the bulk outlet temperature of each fuel element. This is advantageous because the inner fuel plates generate less heat than the outer ones.

* R. J. Gimera, 520-P (Atomics International Division, North American Aviation, Inc., Canoga Park, Calif. 1957).

4. Gas-Cooled—Ford Instrument, GA, and GM

The fourth concept being studied in the long-range program is the gas-cooled reactor. Three companies are involved in this, each with their own ideas—Ford Instrument Co. (FICo), General Atomic, and General Motors.

The gas cooled reactor (GCR) offers advantages of small size, simplicity and flexibility in use. If gas temperatures above 1,300° F are available, the efficiency of this reactor is very attractive. Even though the concept has been discussed at great length,* there are, as yet, no operating reactors using gas coolants at such high temperatures—the GCRE experiment at the National Reactor Testing Station will not go critical until 1959 or 1960.

Ford Instrument. Research and development to date indicates these definite advantages for the gas-cooled reactor: (a) low cost for both installation and operation; (b) high thermal efficiency, with efficiency relatively independent of power level, i.e., high efficiency at both full and part load; (c) compactness—the single loop design of the gas-cooled reactor will offer a system both highly compact and light in weight; (d) maximum safety—the nature of the working fluid used, with its freedom from phase change, means that provisions for containment are simple; and (e) freedom from corrosion—a chemically inert gas can be used.

FICo also believes that the work done thus far on the closed-cycle gas-cooled reactor indicates that continued research and development will result in a prototype plant in operation within five years, but that an operating marine power plant incorporating this type of reactor must be preceded by a certain amount of development effort.

General Atomic. Taking a somewhat different view, GA believes that gas-cooled reactor systems can be designed now, that will be competitive with other reactor types. They see no reason why the efficiencies obtained by modern high-pressure steam power plants cannot be equaled or surpassed by gas-cooled reactors.

GA has proposed a specific design that they believe has considerable promise (see Fig. 3 and table). They have selected materials of construction about which there is already experimental information and which show promise of being economical in the not-too-distant future. The fuel material chosen is a cermet consisting of UO_2 dispersed in stainless steel. This material has been produce satisfactorily, has been tested over a wide range of temperatures and irradiations, and appears to be adequate for the designed conditions.

The moderator material selected is hydrogen in the form of metallic zir-

* NUCLEONICS **14**, No. 3, 33 (1956).

conium hydride. A new material that has been developed during the last few years, it has physical properties resembling metallic zirconium and, thus, permits advantage to be taken of the excellent moderating properties of hydrogen at temperatures where it would be impossible to contain liquid water.

The coolant gas to be used is CO_2. The chemical stability of this gas appears to be adequate, although further tests will be necessary to establish this definitely. At ordinary pressure, the efficiency of CO_2 exceeds that of helium above ~600° F. At high pressures, advantages of CO_2 are even greater.

About 330 fuel-moderator assemblies make up GA's core. Because of the large heat-transfer area required by high-temperature gas cooling, the temperature gradient within the fuel element is unimportant. In this design for example, the maximum temperature drop from center to surface is only 28° F. The choice of fuel-element shape is therefore dictated by fabrication cost, gas-pressure drop, and dimensional stability.

The fuel element for this design consists of a center fuel region cooled by small channels, with a surrounding moderator region. This arrangement results in a lower gas-pressure drop for the same heat-transfer volume and less danger of flow obstruction caused by warping. Because the coolant channels must be internally clad, it might appear to be a rather complicated and costly fuel element to fabricate. Such is not the case, says GA. Furthermore, the fabrication method does not require drawing or swaging but, rather, merely high-temperature sintering. For this reason, it may be possible to produce elements of this type with a lower ratio of steel to UO_2.

The quantity of U^{235} specified (see table) is sufficient to permit a burnup of 30 kg without damage to the fuel element and with reasonable change in reactivity. Boron is mixed with the fuel to reduce the change in reactivity.

General Motors. GM has also come up with a proposal for a specific gas-cooled reactor design (see table). GM prefers helium to CO_2 for the coolant and graphite to ZrH for the moderator. In addition, they prefer a lower operating pressure.

Helium is the preferred working fluid because of its chemical inertness. Graphite was selected as the moderator because of its low cost, low neutron absorption cross section, fair moderating properties, high thermal capacity, high thermal conductivity, high thermal shock resistance, excellent high-temperature structural properties, and because a large amount of engineering data exist on its production, fabrication, and use. Graphite's tendency to grow under irradiation does not appear serious at the design temperatures.

The maximum system pressure chosen is 1,000 psi. This is a compromise between the desirability of high pressures for heat removal, fluid flow, and component size and the tendency to low pressures for easier fabrication and lower leakage. A reactor outlet temperature of 1,300° F is also set as a design point. This outlet temperature appears about the maximum obtainable consistent with the choice of a 1,600° F maximum fuel element surface temperature and is a reasonable value for continuous-duty gas turbine design. The maximum fuel element surface temperature of 1,600° F appears to be a reasonable compromise between low temperatures, which favor long fuel element life and low fission product diffusion, and the desirability of high surface temperatures for high thermal efficiencies.

Fully enriched uranium was chosen on the basis that its use will require less development costs. Each fuel element is composed of a 2.20-in. (i.d.) graphite rod surrounded by two concentric tubes of fuel material. The fuel tubes are 25-mil thick cermet (UO_2 and 316 stainless) sheets clad with 10-mil stainless steel. The fuel-bearing section is 6.5 ft long.

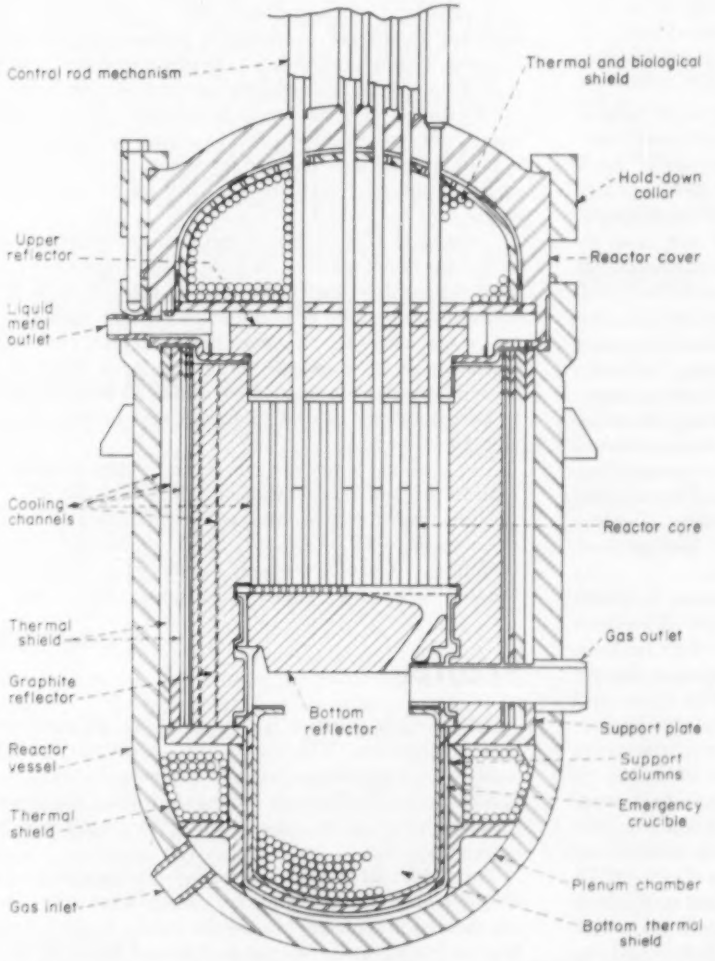
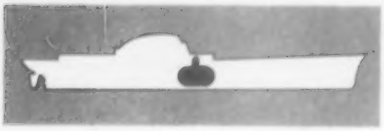


FIG. 3. GA's gas-cooled reactor. Surrounding core region is 1-ft-thick graphite reflector region. Pressure vessel has over-all length of ~21 ft and o.d. of ~7 ft



3. World-Wide Efforts

SEVERAL maritime countries have been intrigued with the potential benefits of nuclear propulsion in commercial shipping: eight have been active in investigating the possibilities. NUCLEONICS asked its foreign staff to survey these efforts to date. It appears that although some are pushing ahead more energetically than others, the three Big Powers—Britain, Russia and the U. S.—are way out in front in this field too.

Britain

The British are confident that the recent rapid pace of development of Calder-type reactors foreshadows their launching a fully competitive merchant A-ship soon. Such a plant would need only slightly-enriched fuel, and only minor changes are likely from its land-based counterparts.

First project is likely to be a 13–15-Mw unit made by Babcock & Wilcox for a 30,000–50,000-ton deadweight tanker built by Cammell Laird, the big Birkenhead yard. Such a vessel could be run at an over-all cost of 0.5 pence per shaft horsepower (equal to cost of fuel oil alone in a conventional ship), according to Atomic Energy Authority reactor-development chief Dunworth. In other words, taking into account higher capital costs and resulting amortization and interest charges, a nuclear-powered tanker or ore-carrier would be immediately competitive.

Hopes are pinned on progressive lowering of the minimal size limitations phased to match availability of scarce U^{235}—and, ultimately by 1965, on use of fuel enriched with plutonium from the civil power plants.

Present aims include reactors for ships down to 20,000 tons deadweight, a profitable starting field. For these smaller vessels, the British have adopted initially the U. S. pressurized-water type, which will be developed for the Admiralty, particularly for submarines. This is now said to be at least ten times as expensive per shaft horsepower as the Calder type. Much cheaper are two other types AEA is intensively developing: slightly enriched, heavy-water-moderated and gas-cooled; and organic-moderated and -cooled. A third type being developed is a graphite-moderated closed-cycle gas-cooled unit using enriched ceramic fuels, and promising gas temperatures of ~1,000° C. British General Electric is building a reactor at Winfrith to work at this temperature, and experts speculate on use of pellet-type uranium-carbide or -oxide fuel dispersed unclad in the graphite matrix.

A number of recent official AEA statements indicate the possibility the government might build a totally unenriched Calder-type unit of 30–40 Mw output for a ship of 50,000 dwt. This could be done without a land-based prototype, and would permit earliest study under seagoing conditions of a wide variety of operational problems. Most of the initial modifications over Calder in the B & W design are structural ones to meet pitch and roll conditions; they include: **1.** positive fuel-element support to prevent tumbling in the gas channels; **2.** positive graphite-core location; **3.** switch from gravity- to power-operated control rods; **4.** completely transistorized instrumentation (existing burst-can-detection equipment is retained); **5.** very-high-density concrete shielding, steel punchings as aggregate; **6.** heat exchangers instrumented for remote operation; **7.** exploiting controlled combustion of fuel oil as "make-up" source for CO_2 coolant.

Charging and discharging of fuel elements would be done only during shutdown, as at Calder, but experience may show this must be done under load, at sea. Then 50% of cruising thrust would be provided by standby diesels.

It is also likely the two-stage pressure steam cycle used in all British civil nuclear stations is being dropped in favor of a single pressure cycle—yielding thermal efficiency to gain simplicity of heat exchanger and turbine design, piping and ducting.

Also planning a nuclear supertanker is the combine of John Brown and Hawker-Siddeley (NU, June '57, 27).

A pressurized water prototype for Britain's first A-sub, *Dreadnought*, (NU, April '57, 21) is to be installed at Dounreay. A new zero-energy assembly for ship studies, Neptune, is nearing completion at Harwell (*see p. 26*).

France

Only work in progress is that on *Q-244*, France's first nuclear submarine (NU, May '57, 27), a 5,000-ton craft to be fueled by natural uranium, and completed in four years. It is being built by France's leading shipyard, Chantiers de l'Atlantique (Penhoët-Loire). No other project has yet been approved.

Two industrial groups were formed (on the initiative of the Merchant Marine Ministry, shortly after Suez), and are making preliminary studies on nuclear tankers: Indatom on boiling-water reactors and France-Atome on pressurized-water types. A third group, Propatome (NU, May '57, 27), was formed to keep abreast of developments.

Germany

Late in April 1956 Germany's various nuclear shipping interests formed a syndicate in Hamburg with the formidable title "Studiengesellschaft für Kernenergieverwertung in Schiffbau und Schiffahrt"—Association for Study of Nuclear Energy Utilization in Shipbuilding and Shipping, grouping shipowners, shipyards, banks, oil and insurance companies. Founders included many big names in German shipping, industry and academic circles; Prof. Erich Bagge of Hamburg Univ. is chairman.

SKSS has under construction a 5-Mw Babcock & Wilcox pool reactor similar to that at Michigan Univ., to be completed next spring, at Geesthacht near Hamburg.

A small power reactor is planned as a ship-propulsion prototype. An order for its design has gone to Prof. Kurt Illies of Hannover Technical University, who has set up two study groups; as in the U. S., one is working on a pressurized-water reactor, the other on a closed-cycle gas system. The former is aimed at a 22,000-ton tanker with 16.5 knots top speed from 10,000-hp engines. Although this is recognized to be small for a reactor plant, it is felt to provide better experience than a larger unit. Reactor and primary circuit are to be enclosed in a steel containment vessel 35 ft in dia × 41 ft long, weighing 900 tons. Primary operating pressure will be 2,350 psi; heat exchangers will deliver 615 psi saturated steam to the turbine. Safety features in the containment vessel include a pressure valve that will adjust for greater pressure should the vessel sink, and a system of tubes acting like syphons that prevent primary water from flowing out should the ship capsize. The Germans estimate "a two-year range may not be too much before the first German ship reactor can be installed."

Meantime, SKSS plans to compete in the international market for nuclear ships.

Netherlands

A study group set up last year by Reactor Center Netherlands, the Foundation for Applied Physical Research (T.N.O.) and the Netherlands Shipowners' Association, resulted in establishment of a Nuclear Ship Propulsion Foundation including also the Netherlands Shipbuilders' Assn. and the Technical University of Delft. Study of actual building has been deferred.

Norway

Two years ago the Norwegian Institute for Atomic Energy began technical studies on nuclear propulsion. Independently, seven shipowners have been making feasibility studies: Westfal-Larsen & Co., Jacob Kjöde, Sig. Bergesen, Anders Jahre, Den Norske Amerikalinje (Norwegian-American Line), Leif Höegh & Co., and Fred. Olsen & Co. The group is reported to be considering spending $400,000–500,000 for preliminary specifications of an A-tanker.

Sweden

After a preliminary study made in collaboration with A. B. Atomenergi, Sweden's atomic development company, and the DeLaval Steam Turbine Co. of Stockholm, the Swedish Shipbuilding Research Foundation has gone on into detailed studies of shielding and heat-transfer problems for different reactor types. The major shipyards have also set up nuclear-research groups but have so far been primarily concerned with training problems. A 65,000-ton tanker now on order for Cities Service Corp. at the Uddevallavarvet shipyard, Uddevalla, is slated to be powered by a General Electric reactor (NU, July '57, 27). If tests are satisfactory, one or more of six subsequent tankers on order at this yard may also be nuclear.

Soviet Union

That the Russians are building a nuclear submarine is considered likely by most Western observers, although Russian silence on this point has been tomb-like. In contrast, details have not been lacking on the world's first nuclear surface ship, the icebreaker *Lenin*, now approaching the launching stage at a Leningrad shipyard (characteristics, NU, June '56, 18B; diagram of propulsion plant, Aug. '56, R3; photo, Aug. '57, 18). The vessel may be used as an Archangel-Vladivostok passenger-cargo liner. Her 200-Mw(th) reactor is believed to be graphite-moderated and water-cooled, like the first Soviet central station; it provides 44,000 hp through turboelectric drive to push the ship at 18 knots "in calm weather." She can cruise one year without refueling; 525 ft long and 82 ft in beam, she will carry 5,000 tons of cargo.

Two Soviet satellites, East Germany and Poland, are also contemplating nuclear ship construction.

Japan

The 10-year plan for development of nuclear-powered vessels adopted in April 1956 by Japan's Ministry of Transportation has hardly gotten off the ground. It calls for construction of two 40,000-deadweight-ton merchant ships, probably supertankers, and reactors to power them. The first five years are to be devoted to basic research and experimentation, the next three to final design, the last two to construction.

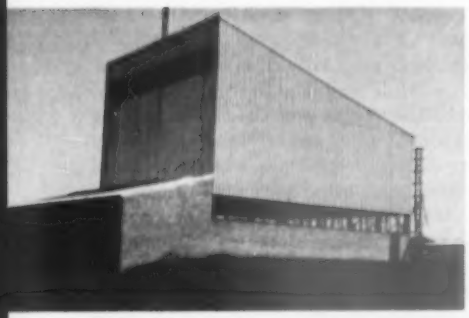
Four competing shipyards—Ishikawajima Heavy Industries, Hitachi Shipbuilding and Engineering, Kawasaki Dockyard, and the Mitsubishi group—are conducting research on various parts of the projected 20,000–30,000-hp vessels. It hasn't yet been decided which of the four will actually build nuclear-propelled ships. All four are far behind schedule. Only Kawasaki has done any actual experimentation so far: on welding reactor vessels and on reactor control systems. It will probably get a government subsidy of 15-million yen ($38,300) shortly to speed up this work. Main reason for the slow progress is delay in purchase of an experimental ship reactor from the U. S. The government planned to buy a pressurized water or boiling reactor last year for installation as a prototype, but the 4.3-billion yen ($11-million) budget for it has not yet cleared the Diet; an order is expected to be placed next year. The four companies will probably seek technical aid from U. S. firms. Mitsubishi already has an exchange-of-information agreement with Westinghouse, expected to be approved by the Tokyo government next year.

HOW DOES IT FEEL TO GET A RESEARCH REACTOR?

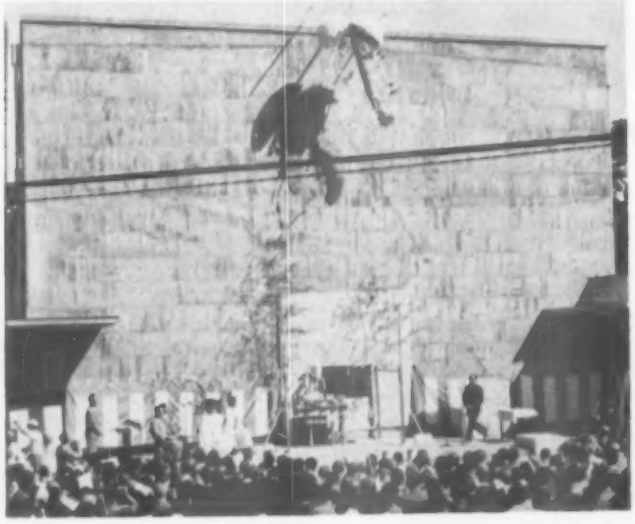
Curiosity over a plate-type fuel element in Brazil (right), smiling faces in Japan (far right) supply the answer as . . .

Five U. S.-Built Reactors

Six brand-new research reactors in five countries are the first fruits of the U. S. Atoms-for-Peace program (see cover). They include three Atomics International solution-type homogeneous "water boilers" for Denmark, Japan, and Frankfurt in Germany; two AMF Atomics swimming pools for the Netherlands and Munich, Germany, and a Babcock & Wilcox pool for Brazil. The Frankfurt unit was scheduled to go into operation as this issue went to press. In addition, the 1955 Geneva Conference exhibit reactor is now working as part of the Swiss nuclear research center, and there are 18 other research reactors, including one high-flux test reactor, being built or designed in the U. S. for export.



DENMARK. Simple shed houses first of three reactors in Risø nuclear research center, an AI 5-w homogeneous

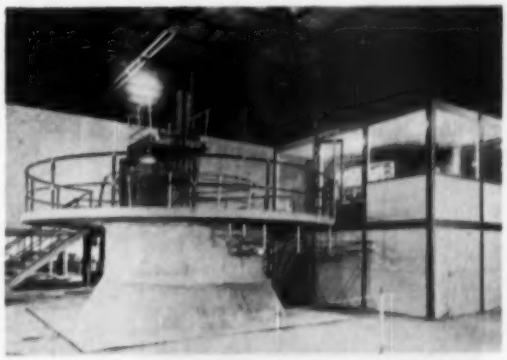


JAPAN. Scene at ceremony as Japanese Research Reactor 1 first went critical Sept. 18 at Tokai-mura near Tokyo. Fissioned paper sphere at top is good-luck symbol

Go Critical

MUNICH. Conical building at Garching near Munich contains AMF 1-Mw pool that went critical Oct. 23; 4-in.-thick reinforced-concrete "egg-shell" is 100 ft high

BRAZIL. Working floor level of São Paulo University 5-Mw pool reactor shows triple bank of hot storage cells in back wall



NETHERLANDS. Demonstration reactor, 10-kw pool that operated July 1–Sept. 16 at "The Atom" exhibit at Amsterdam's Schiphol airport, will be reinstalled at permanent home in Holland's research center, will then run at 1 Mw

FRANKFURT. AI technicians install thermal column of reactor for Johann Wolfgang Goethe University, a 50-kw unit like that in Japan. Critical testing is set for early this month

Prospectors need small instruments. Canada's Department of Mines has developed 4 prototypes for search and assay that can be carried by hand or in the pocket. They are cheap and reliable

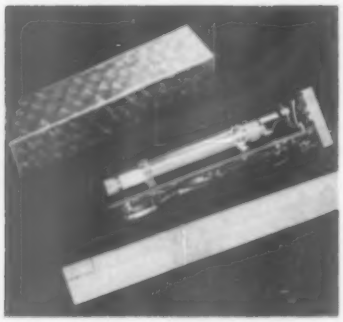


FIG. 1. G-M counter has aural indication. First model had square case

All-Transistor Circuits

By G. G. EICHHOLZ, G. E. ALEXANDER and A. H. BETTENS
Department of Mines and Technical Surveys
Ottawa, Canada

IN THE LAST FEW YEARS as uranium mining has become important among Canadian mining industries, a need has arisen for specialized radiation detectors. As a limited demand was anticipated, we undertook development of a number of portable detectors.

The characteristics of five of them are tabulated on p. 92. They have completely transistorized circuits for light weight and compactness. Circuits are kept as simple as possible, and circuit "building blocks" are standardized as much as possible. The units are intended as prototypes to stimulate commercial production.

High-voltage supplies. High-voltage circuits were largely based on a simple oscillator power supply (*1, 2*) modified to suit the particular requirements. Earlier designs with vibrator power supplies (*3*) have proved unsatisfactory because of limited life, large bulk, and high battery drain.

Portable G-M Counter

To avoid the bulkiness of most portable G-M counters we chose a G-M tube first and designed around it. The tube has to be large, halogen-quenched for long life, and preferably low-voltage.

For a rugged, lightweight, general-purpose survey instrument it was decided to use aural indication only. Brush BB-134 hearing-aid* and Argonne microphones were found to be small enough yet loud enough.

* Brush Electronics Co., Cleveland Ohio.

Two mechanical designs were made. The first was in a square box (Fig. 1), but the later model in a case of elliptical cross section fits the hand much better (Fig. 2). Both are powered by three penlight batteries, Eveready No. 912 or equivalent. The circuit consists of only an oscillator power supply with voltage tripler and direct aural indication (Fig. 3).

Tests show that it is advisable to coat the G-M tube with black paint or to wrap it with friction tape to reduce its photosensitivity.

Directional G-M Counters

Another problem was to make a directional counter for underground use in uranium mines. Preliminary

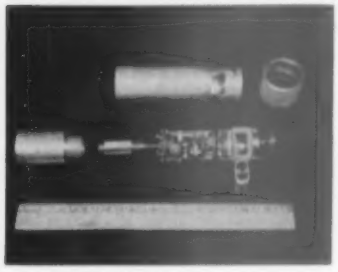
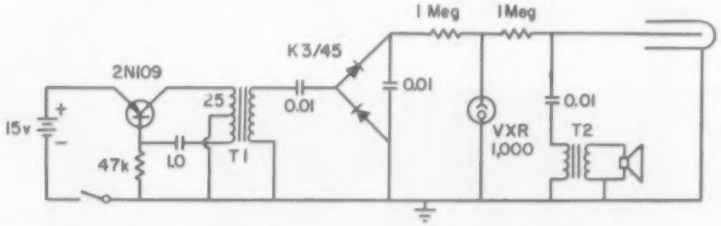


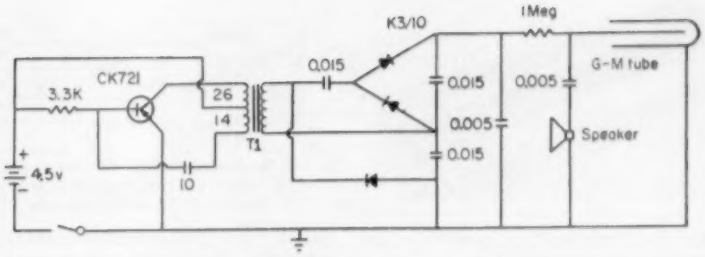
FIG. 4. Directional counter has either speaker or meter indication



T1-Ferroxcube, Primary: 45 turns tapped at 20, Secondary: 2,000 turns.
T2-Hammond 142J

FIG. 5. Speaker model of directional counter has this oscillator-doubler circuit. Life is limited by relatively large battery drain of 8 ma

FIG. 2. Oval case makes this model of G-M counter easier to hold



T1–Ferroxcube, Primary: 40 turns tapped at 14, Secondary: 850 turns
Speaker – Brush BB-134 (Crystal)

FIG. 3. Circuit for portable G-M counter has transistor oscillator and voltage tripler. It is powered by three penlight batteries

for Portable Detectors

work on this subject has been described previously (*3*), but much further development has taken place since.

Because of the high ambient background radiation, good directionality is essential. On the other hand weight and size must be kept down to make the unit acceptable to mine staff; pocket size is desirable. One possible approach is a very small, insensitive G-M tube to reduce background. However, this means insufficient sensitivity to low-grade ores, and for this reason we chose a different approach. We use the highly localized sensitivity of an end-window G-M tube run in the "corona-spark region" (*3, 4*); with this system shielding is not excessive.

Field tests on earlier units ("spotters") have shown that cables for separate detector probes and earphones are objectionable. Therefore all recent units have been designed on the flashlight pattern as self-contained, tubular detectors.

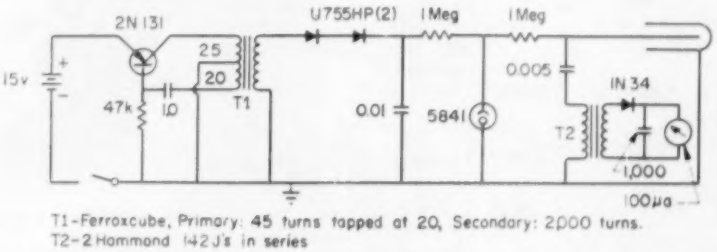
Three different models have been made: (a) a simple, highly collimated detector with loud aural indication, (b) a similar unit with meter indication and interchangeable shields and (c) a less directional counter for the detection of radioactive dynamite (*5*). These instruments differ only in minor details; most of their mechanical features are the same. They use halogen-quenched end-window G-M tubes with a concentric lead shield at one end. The indicator is mounted on the other end. The unit is switched on and off by a knurled ring on the case.

Figure 4 is an exploded view of the directional counter with speaker indication. The tube is run at 1,200 volts; that is, above the G-M plateau. The speaker is a miniature, waterproof, permanent-magnet type made by Canadian Benaudi Ltd.* Power is supplied by a 15-volt hearing-aid battery The poor shelf life of these batteries is a weakness of the present unit, and alternatives are being investigated. The shield is a lead-filled brass container. Figure 5 shows the circuit.

Different insets can be screwed into the shield to provide different collimation angles. The tube window is protected from rock particles by a small screen.

Meter model. The directional counter with meter indication uses the same shell with the addition of a metal adapter ring to mount the meter in place of the speaker. Its circuit is shown in Fig. 6. The meter used

* 287 Metcalfe St., Ottawa, Ont.

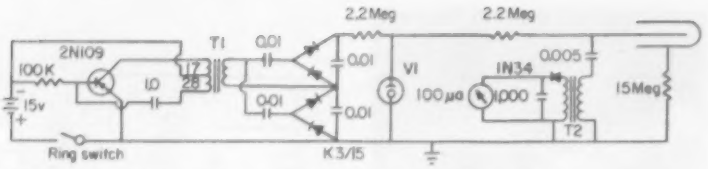


T1–Ferroxcube, Primary: 45 turns tapped at 20, Secondary: 2,000 turns.
T2–2 Hammond 142J's in series

FIG. 6. Meter model uses half-wave rectifier supply and replaces speaker in circuit with transformer-coupled meter-and-rectifier system

FIG. 7. Heavy shield adapts directional counter for high-grade-uranium mines

FIG. 8. Semidirectional counter locates dynamite that fails to explode



T1-Ferroxcube, Primary: 45 turns tapped at 17, Secondary, 2,000 turns
T2- Output: 500 ohms, Input 50,000 (2 Hammond 142 J transformers)
VI - Victoreen 5950 corona regulator

FIG. 9. Circuit for semidirectional counter is similar to that of Fig. 5, but it has higher sensitivity. Hearing-aid battery supplies 15 volts

is International Instruments' Model 150W microammeter, 100 μa full scale. This has proved rugged enough and easy to mount. A Benaudi rubber ring fits the adapter ring to the counter case. For greater simplicity no zero-setting control is provided, and the sensitivity must be checked periodically with a suitable standard source.

In order to adapt the counter for use in high-grade-uranium mines a special heavy shield was designed that is interchangeable with the standard shield. For easier carrying it is provided with a shoulder strap, and its use has proved feasible in field tests underground. Use of the heavy shield does not often justify its extra inconvenience, but it has proved valuable where it is needed. It is shown in Fig. 7.

Semidirectional Counter

In connection with the work on location of radioactive dynamite (see p. 170) (*5*) it became clear that the directional counter could be *too* directional. A *semi*directional counter was designed (Fig. 8). For this a slightly larger end-window tube was chosen with a larger shield opening. The circuit is shown in Fig. 9 and is seen to follow that of Fig. 5 in essentials, though its sensitivity is higher. Mechanical details had to be especially designed as the EW3H G-M tube required a longer case than the other model.

Scintillation Detector

The design of a gun-type portable scintillation counter (Fig. 10) was undertaken as it was felt that existing counters were unduly heavy and required too many expensive batteries (*6*). This detector uses three 935 batteries for power. The meter has five overlapping ranges and a zero-set control. The complete circuit diagram is presented in Fig. 11.

The sensitivity of the detector on its most sensitive range is such that a 100-gm sample of ore containing 0.5% U_3O_8 will give a deflection of 6 μa at a distance of 6 in. The effective battery life is governed mainly by the requirements of the oscillator, which must provide enough voltage through the quadrupler circuit to keep the corona regulator struck.

Carborne Counter

In mobile prospecting by jeep or car it is not usually possible for the driver to watch a meter or dial while navigating across country over poor roads. For that reason a scintillation unit was designed to be mounted in a car and trip an alarm whenever a predetermined radiation level is exceeded. The detector unit is self-contained and demountable and can be used as a portable counter to investigate mineral occurrences. The buzzer is driven from the car battery, and the counter has batteries that can be trickle-charged from the car battery.

The complete circuit diagram is pre-

Summary of Counter Characteristics

Counter	*Simple Geiger*	*Directional*	*Semidirectional*	*Scintillation gun*	*Carborne*
Sensitive element	20th Century G10H tube	Amperex 230N tube	20th Century EW3H	1¼ × 1½ in. NaI(Tl) & 6199	NaI(Tl) & 6292
Operating voltage	370	1,200	600		
Weight (total)(lb)	1.3	3.0	5.8	2.9	7.8
Weight (without shield)		1.4	1.8		3.4 (top part only)
Approx. sensitivity range (mr/hr)	0.03–12	0.03–0.35 (meter type)	0.02–0.2	0.008–10	0.01–10
Sensitive cone	—	40°	60°	—	—
Estimated component cost	$55	$70	$75	$170	$200
Battery voltage (volts)	4.5	15	15	4.5	6.3
Current drain (ma)	5	8	4	8	6
Expected life (days at 4 hr/day)	21	2	5	>30	(buzzer extra)

FIG. 10. Gun-style scintillation detector has zero set and 5 meter ranges

sented in Fig. 12. The power-supply circuit is contained in a shielded section of the detector unit. A 6-pin Jones plug completes the supply circuits when the portable unit is detached from its cradle. The meter is a 1¾-in. Simpson Model 182, 100 μa full scale. The alarm system consists essentially of a Type 705 Weston Sensitrol meter relay in series with the detector meter. When the relay is tripped, it closes the buzzer circuit, which derives its power from the car battery. The relay is reset manually, and its sensitivity is controlled by the detector-range switch. Figure 13 shows the instrument.

The choice of battery posed a definite problem. Easiest solution for a carborne unit is to operate the whole system from the car battery. However, in the present case it was felt to be preferable to keep the scintillation detector self-contained for independent use. Rechargeable batteries permit long uninterrupted service. The choice of suitable lightweight batteries proved rather limited, and the type selected in the end is the Yardney Silvercel type LR-05.* These are lightweight zinc-silver cells with an alkaline filling. Unfortunately they are very sensitive to overcharging, and to protect them it is necessary to charge them from the car battery while the car engine is not running. The circuit shown is intended for operation of the detector system insulated from the car body. This makes it independent of the grounding of the car battery, but the connection to plug P1 must be made as shown.

* Yardney Electric Corp., 105 Chambers St., N. Y., N. Y.

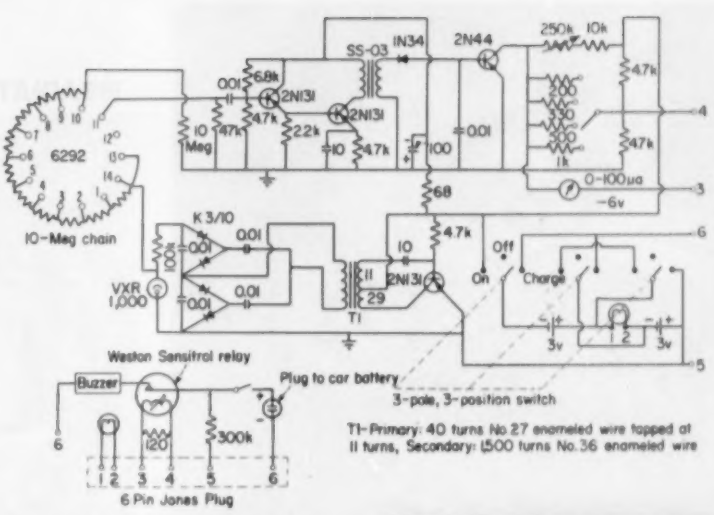


FIG. 12. Circuit for carborne unit includes buzzer operated from car battery to indicate high counting rate and rechargeable batteries in portable section

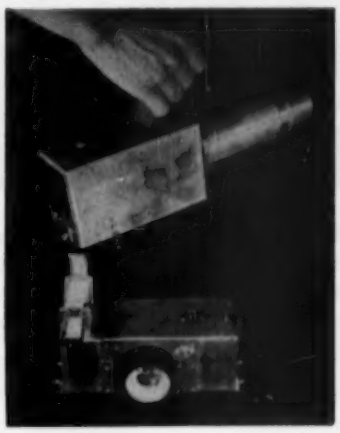


FIG. 13. Top section of carborne detector is hand-portable

In this development mechanical design has been varied as much as possible to investigate different approaches, and further changes will probably be required for commercial production. The work has demonstrated that considerable economies are possible in size, weight, and component requirements.

There is also indication that divergence in design is to be expected as use of radioactivity spreads and higher specialization is required. Instrument cost and complexity grow steadily, but at the same time we should realize the savings that are possible by developments in simpler instrumentation.

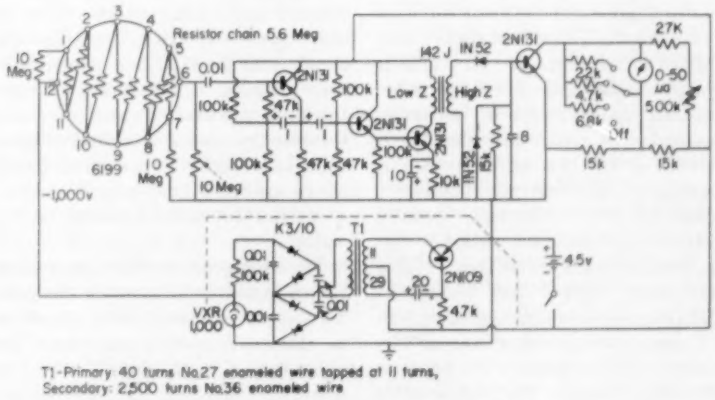


FIG. 11. Circuit for portable scintillation detector of Fig. 10

* * *

The work described here has benefited from the cooperation of many of our colleagues at the Mines Branch. Thanks are due particularly to L. S. Collett and R. B. Rowe of the Geological Survey of Canada for initial discussion of requirements and for assistance with field tests, to G. Meilleur for his skillful workmanship and many suggestions concerning the mechanical design of the units, to E. Hausmann of Canadian Benaudi Ltd. for the gift of a miniature speaker unit and to J. V. Krzyszewski and C. A. Josling for their assistance in the construction of the units and the drafting of circuits.

This article is based on Mines Branch Topical Report TR-136/56 and published by permission of the Director, Mines Branch, Ottawa.

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4. C. M. Lapointe, A. H. Bettens. U. S., Patent application Serial No. 508,724 (May 16 1955)
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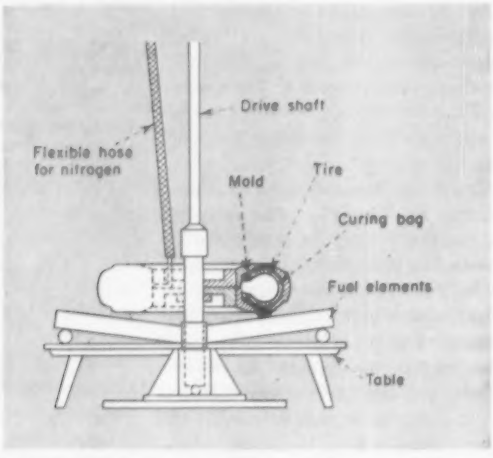
6. H. H. Schwartz. Portable scintillation counters, Mines Branch Internal Report IR-183/55. (November 1955)

IRRADIATION SETUP . . .



Mold is supported on bearing that rests on canal bottom. Fuel elements rest below it on aluminum table. Flexible hose provides nitrogen to curing bag

First radiation-vulcanized tire is rotated in steel mold above spent fuel elements in MTR gamma canal. Preliminary tests indicate that . . .

Radiation Makes

RADIATION VULCANIZATION has been known to have commercial possibilities for some time (*1*). To test the feasibility of making tires this way, we vulcanized two experimental tires by irradiation in the gamma canal at the Materials Testing Reactor.

Several reasons led us to make our first radiation-cured tire: (a) Our tire-manufacturing division showed interest in the process as a possible solution for some of its problems. (b) Tire service provides one of the most severe application tests to which rubber is subjected. (c) Our radiation-engineering group, which has been studying the application of radiation processing to company products, felt that a tire experiment would provide valuable experience and information for delivering prescribed doses to large objects. (d) An experiment on a tire offers some information of military significance.

Preliminary tests on the first tire indicate that such tires will age and wear at least as well as conventionally vulcanized tires and perhaps better. Complete road tests are now being carried out on the second tire.

Even without antioxidants radiation-vulcanized rubber has greater resistance to degradation by oxidation than conventionally vulcanized rubber containing antioxidants (*2, 3*). This is because rubber vulcanized by radiation has its polyisoprene molecules cross-linked by carbon-to-carbon bonds instead of by the sulfur-containing linkages of conventionally vulcanized rubber (*2, 4–7*). Although chemical means of producing the carbon-to-carbon cross linking are available (*8*), they have never worked well enough to attain any degree of commercial success.

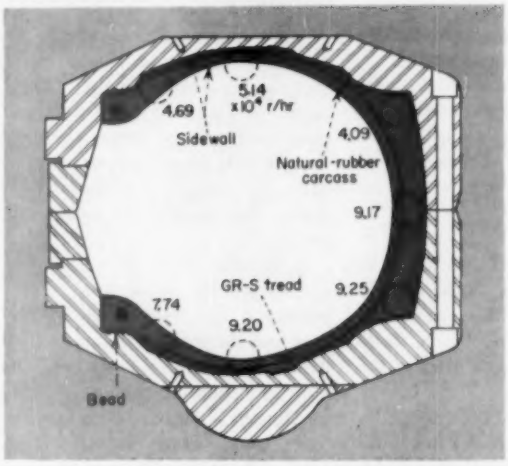
There are two principal reasons why radiation vulcanization is not yet commercially practical: the high cost of radiation and the high dose required—$3–5 \times 10^7$ r. The box on p. 96 indicates why we think that both cost and required dose will come down in the future.

Irradiation

The gamma facility of the MTR was selected as the most suitable place for our experiment. Here spent fuel elements from the MTR are used as radiation sources. Fuel-element end fixtures are trimmed off, and the center sections are placed in cadmium boxes to make criticality impossible. Irradiations are carried out near the bottom of a 6-ft-wide canal containing 16 ft of water.

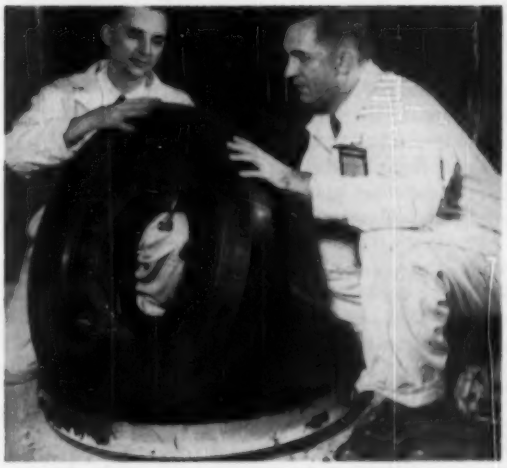
The arrangement of our apparatus is shown in the two figures on this page. Twenty fuel elements were placed on an aluminum table in two rows. The outer end of each element was ½ in. above the inner end. The tilt was provided so that any gas produced by

MOLD AND TIRE . . .



Contour of mold was adjusted to provide proper dose rates. Dotted circles show positions of dosimetry bottles, and numbers are dose rates observed

TIRE EMERGES . . .



Smooth tread permits removal of tire from mold after only preliminary decontamination. Pips show that cold flow occurred in early stages of curing

Better, Longer-Lasting Tires

By CHARLES H. STOCKMAN, DALE J. HARMON, and HARRY F. NEFF
The B. F. Goodrich Co., Brecksville, Ohio

radiolytic decomposition of water could escape easily. The tire mold was supported by a bearing beneath the table so that it was ¼ in. from the top surfaces of the fuel elements at the nearest points.

The mold was rotated at 0.97 rpm. Nitrogen was supplied continuously to a curing bag* inside the tire through the flexible hose. A standard gear reducer was modified to permit connection of a rotary union, and the gas was supplied through this connection at 200 psig.

Protection of apparatus. In the vulcanization of our first tire all of the underwater apparatus was painted with two coats of Parr-Bond primer and two coats of Tygofilm strippable coating. This coating system on steel had shown no gross damage when irradiated under water to a dose of 2.7×10^7 r in the B. F. Goodrich Co^{60} facility (*9*). However, at the 10×-greater dose to which our mold was exposed, radiation damage to the paint was severe.

In the vulcanization of the second tire the mold was painted with Amercote 31. This withstood radiation damage much better, and the paint film remained intact at the end of the experiment.

The radiation intensity from the mold immediately after it was removed from the canal was 10 mr/hr 2 in. from the surface. This was reduced to 1 mr/hr by a single scrub with soap and water. Additional scrubbings reduced the mold contamination to a negligible level.

Since the water in the radiation facility contained dissolved radioactive matter that might be absorbed in rub-

With grooving and cross cutting standard passenger-car tire is ready for the road. A second one is now undergoing complete road testing. So far, testing shows more uniform vulcanization and better tires than by conventional curing

* A curing bag is similar to an inner tube, but it has walls ⅛–¼ in. thick. It is placed in the tire to force it against the mold wall during curing.

ber, we prevented contact between water and tire. Vent holes in the mold were plugged. The joint between the two halves was taped and then painted with Tygofilm. The curing bag was pressurized before the mold was lowered into the water. Water did, however, come in contact with the curing bag in the area around the stem. This rubber was contaminated and had to be cut away and discarded.

The underwater bearing supporting the mold was lubricated with a mixture of Dowtherm and graphite. The same mixture was used as a thread lubricant on the bolts holding the mold together. No significant radiation damage appeared in this lubricant.

Tire Construction

Vulcanization of a standard production passenger-car tire promised the largest amount of useful information and experience. Such tires normally have GR-S* treads and natural-rubber or natural-rubber-blend carcasses. Natural rubber and GR-S reach optimum cure at different doses. Thus it was a challenge to bring all parts of the tire to optimum cure with one exposure in the gamma facility.

Our tire was a tubeless one with a GR-S tread and a natural-rubber (hevea) carcass. Some butyl rubber is in the liner normally used for such tires. Since it becomes fluid at the radiation doses involved, the liner for this tire was made of natural rubber. All curing agents, chemical accelerators and antioxidants were omitted. The recipes used are shown in the table.

Because it is more resistant to radiation than Nylon (*10*), Dacron cord was used. (Nylon cord loses a considerable fraction of its strength when irradiated to the vulcanizing dose.)

Mold Design

The steel mold that holds a tire in processing had to serve a second function in this situation. Its cross section was designed so that different doses were delivered to different parts of the tire.

A tire mold with a smooth tread design was selected so that the tire could easily be removed from the mold. This was done for two reasons. First, the water in the canal contains dissolved radioactive matter, which tends to concentrate in oxide films on metal parts. The mold would thus be somewhat radioactive at the completion of the experiment, and we did not know how difficult decontamination would be. The smooth-tread mold would allow us to return the tire to our laboratory without waiting for the mold to be decontaminated. Second, there was the possibility that we would misjudge the time required for vulcanization. With a smooth mold we could readily remove the tire and check its hardness to ensure a proper state of cure.

Dosimetry

The thickness of the metal in a conventional tire mold varies radically over the periphery of a tire. Furthermore, to facilitate factory handling, these molds have large, thick, steel rims, which would seriously interfere with the passage of radiation. Thus it was obvious that the mold must be modified.

A suitable mold cross section was determined by calculation. For this purpose a line source was determined that had the same radiation characteristics as an MTR fuel element. Radiation distribution data were supplied by Donald L. Hunke of Phillips Petroleum Co., Atomic Energy Division (*11*). These data were normalized to give a dose rate of 5×10^4 r/hr at a point 4 in. from the element center at midplane. This is approximately the dose rate for 100-day-old elements.

The data consisted of dose measurements in water along a line perpendicular to the fuel-element axis at its center, and along another line parallel to the axis and four inches from it. It was assumed that the source kernel was $D = B(r) \cos kz \; e^{-\mu r}/r^2$. $B(r)$ is the buildup factor, μ is the linear absorption coefficient, r is the distance from a source point to a point in space, and $\cos kz$ gives the distribution of active material in the fuel element as a function of distance from the midplane ($z = 0$). Since the thermal flux in the reactor is essentially a cosine distribution, the induced activity in the fuel elements should follow this rule. By assuming a linear buildup factor, a value of k was found that gave a dose distribution fitting the experimental distribution to within 5%.

Ray analysis was used to compute the dose at different space points with the tire in place. To determine mold dimensions, a cross section of the tire–curing-bag assembly was drawn in proper position with respect to the array of line sources, and a trial mold cross section was drawn around it. Each source was divided into twelve equal-length segments, and rays were drawn from the midpoint of each segment to predetermined points in the tire. For each ray the lengths of path in water, steel, rubber, and nitrogen (in the curing bag) were measured.

* GR-S is the most widely used of the synthetic rubbers. It is a 78%-butadiene-22%-styrene copolymer.

What Does It Cost? . . . What Will It Cost?

Production vulcanization of automobile tires by radiation is not economically practical today. The cheapest radiation source available today is the electron-beam radiation from the General Electric Co. 10-kw resonant transformer (*13*). With an over-all irradiation efficiency of 50%—about the maximum one can expect—this device could provide 4,700 megarep-lb of useful irradiation per hour at a cost of 0.86¢/megarep-lb. Since the vulcanization dose is 40 megarep, vulcanization of a 23-lb passenger-car tire would require 920 megarep-lb costing $7.91. There is no allowance here for radiation lost in the mold.

Richard Jeppson of Applied Radiation Corp. has predicted that in the future a 400-kw 10-Mev linear accelerator might sell for $700,000 (*14*). With such a device we estimate that it would cost $1.38 to vulcanize the same tire. Again there is no allowance for radiation lost in the mold. In both of these estimates all other costs of radiation are included: operation, maintenance, taxes, overhead, and 15% profit on investment after 52% corporate income tax.

In the future a nuclear economy gross-fission-product radiation might bring costs down to 0.1¢/megarep-lb. Then radiation vulcanization would be in a range competitive with heat vulcanization.

There is also a real possibility of reducing the cost by reducing the amount of radiation required. R. B. Mesrobian spoke of complete vulcanization at <1 megarep when rubber is mixed with 15% styrene (*15*). This is a 40-fold reduction of dose. Probably other methods of reducing the dose will be found.

The contributions of the rays were summed at each point. Corrections in the mold cross section were made until the desired uniformity of dose rate was obtained.

The original metal thickness of the mold was only ¼ in. at the sidewall. Additional steel was required here to prevent overdosing the sidewall when the tread was at optimum cure. Consequently a shield ring 1¼ in. thick, shaped as a segment of a circle, was added as shown in the figure on page 95. To cure both sides of the tire equally the mold had to be turned over halfway through the irradiation time. Only one sidewall shield ring was provided, and it was always attached to whichever side of the mold was next to the fuel elements.

Irradiation time. Fuel elements 200–300 days old were made available for the irradiation. The required irradiation time was determined with ferrous-sulfate dosimetry in the mold. Bottles of the dosimetry solution were taped at seven different positions of the mold cross section as shown in the figure. An inner tube was placed in the mold to simulate the gas space provided by the curing bag during irradiation. It was recognized that the absence of the rubber mass in the tire and curing-bag assembly would produce a dose distribution different from that desired and that the dosimetry results would have to be interpreted accordingly. The irradiation time was chosen to give a dose of 4×10^7 r to the bead. The total time required was 640 hr, and the mold was turned over after 330 hr.

Stocks in Radiation-Vulcanized Tire

Material	*Parts*
Tread	
GR-S 1500/1501	100
HAF Black	47.5
Processing Oil	10
Carcass and Liner	
Hevea Blend	100
FEF Black	30
Processing Oil	7
Fatty Acid	2
Bead	
GR-S 1002	50
Hevea Blend	50
FEF Black	20
SRF Black	100
Processing Oil	12
Fatty Acid	3

Radiation Vulcanization From 1927 to 1957

The B. F. Goodrich Co. has been interested in the use of ionizing radiation for vulcanization since 1927 when E. B. Newton first used cathode rays for this purpose. A patent on the process was issued in 1933 (*1*). As did all the major rubber companies, B. F. Goodrich intensified work in this area in the early 1950's when radiation sources became less expensive and more readily available.

By the summer of 1956 work on radiation vulcanization had progressed to the point that we were ready to test finished articles of rubber cured by this means.

Results

The tire is shown as it came from the mold and as it appeared after a tread design had been given to it by grooving and cross cutting. Small rubber pips on the tread indicate that cold flow of the unvulcanized stock occurred in the early stages of the operation. This flow is necessary to produce smooth molded surfaces, especially at the tread splice. In a more rapid radiation vulcanization there would not be time for this to take place, and a different means of smoothing out the splice would have to be found.

Tire-tread hardness measurements in our Akron laboratory about a week after the tire was removed from the mold showed a hardness in the normally expected range for GR-S passenger-car-tire treads.* Thus the degree of vulcanization was satisfactory.

Abrasion-test buttons of the tread stock have also been vulcanized at the calculated dose given the tire tread by exposure in the Goodrich gamma facility. These show an abrasion resistance about 10% above that for production tread stock. In an accelerated aging test radiation-vulcanized samples lasted two to three times longer than conventionally vulcanized production tire stocks. (Life was measured by the time required for an initial stress to relax to 50% of its original value. Stress relaxation provides a measure of chain scission in the rubber, one of its most important modes of oxidative degradation.)

The uniformity of vulcanization of the tread, both circumferentially and axially, was better than is obtained by heat vulcanization. This was shown both by hardness measurements and by determination of the relative average molecular weight between cross-links from the swelling of the rubber in benzene. A theoretical formula relates the swelling and the molecular weight. Since there is considerable controversy concerning the effect of carbon black on the relationship, the result is used as a relative value rather than an absolute one (*11*).

Our experiment shows that a reasonable uniformity of radiation dose can be attained in large objects even when these objects are encased in heavy metallic molds and that tires can be satisfactorily vulcanized by radiation. Although road tests of these tires have not been completed, laboratory tests have indicated that radiation-vulcanized tires age at least as well as conventionally vulcanized tires and may wear longer and better.

* * *

The authors wish to acknowledge the valuable help of Milton A. Reinhart and Leroy J. Vandenberg, who prepared the special stocks and supervised the tire construction, and of Dr. Richard G. Bauman, who provided advice and consultation. Considerable thanks should be accorded Donald L. Hunke of Phillips Petroleum Company, Atomic Energy Division, for his cooperation and assistance in carrying out the irradiation.

* Shore A hardness was 58–59. The normal range for Shore A hardness of GR-S passenger-car-tire treads is 55–60.

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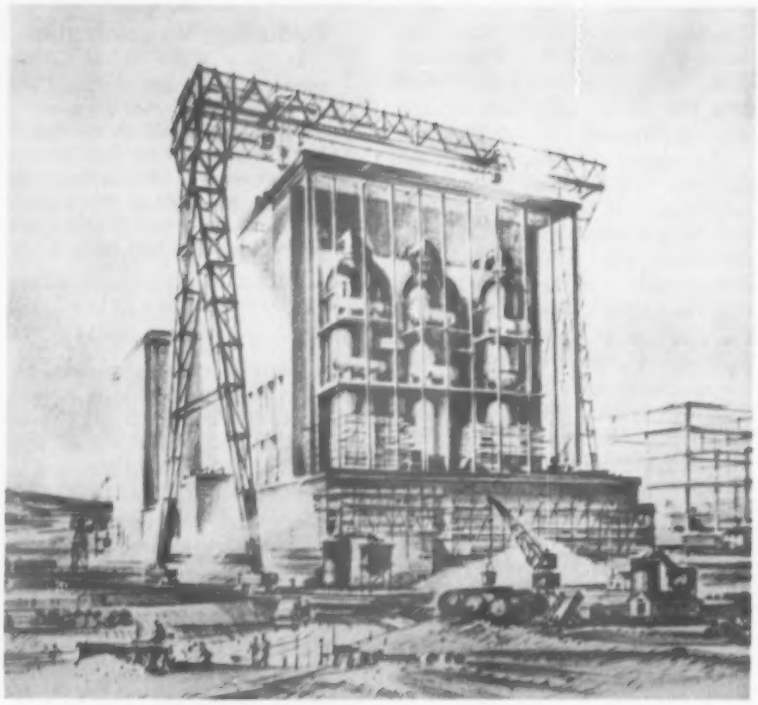


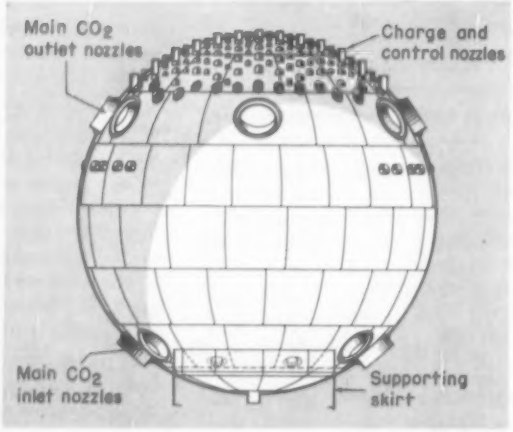
HINKLEY POINT POWER STATION (NU, Oct. '57 p. 24) will be world's largest when completed in 1962. Artist's sketch shows 400-ton-capacity traveling crane (also to be world's record) that will assist in plant erection. Contract for construction of reactor plant was awarded by British Central Electricity Authority in September to consortium of English Electric–Babcock & Wilcox–Taylor Woodrow

Hinkley Point

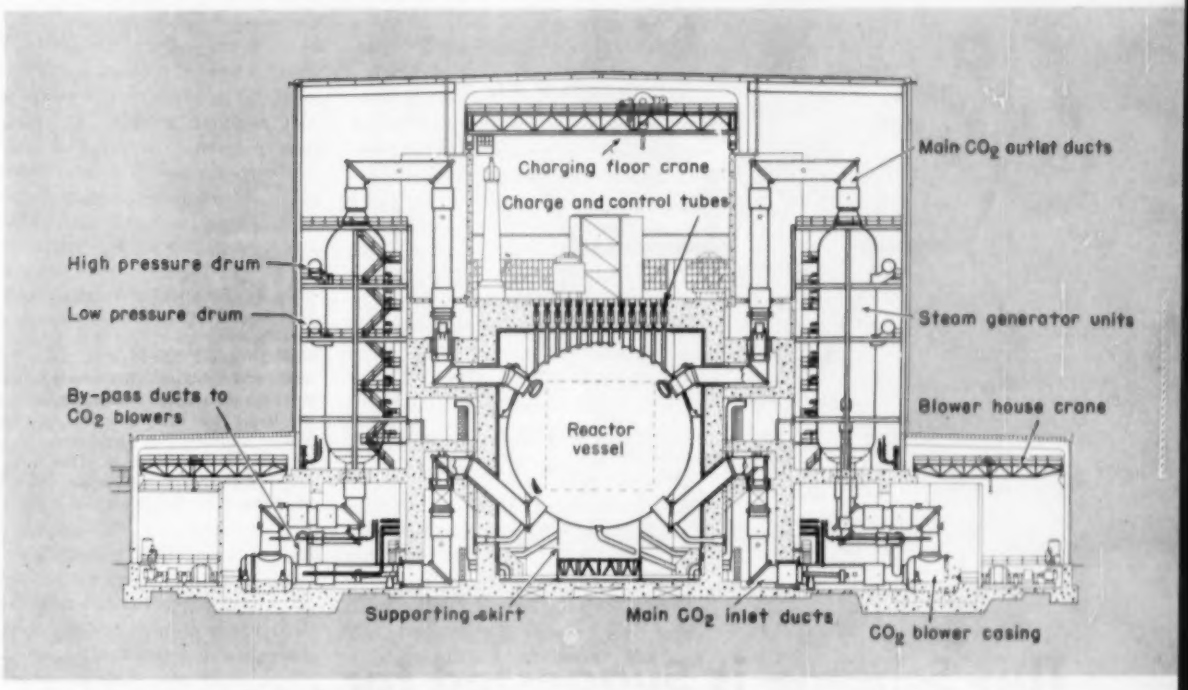
Britain's–and World's–

Hinkley Point Design Data

Total thermal power, 2 reactors	1,960 Mw
Net electrical output, 2 reactors	500,000 kw
Operating pressure	175 psi
Gas flow	10,000 lb/sec
Core diameter	49 ft
Core height	25 ft
Number of fuel channels	4,500
Fuel rod diameter	1⅛ in.
Fuel rod length	3 ft
Pressure vessel, thickness	3 in.
diameter	67 ft
Steam generator, number per reactor	6
diameter	21.5 ft
height	90 ft
Maximum gas temperature	>750° F
Maximum fuel temperature	805° F
Maximum steam temperature	685° F
Maximum steam pressure	650 psi
Total plant cost	$168-million
Estimated power cost (mills/kwh)	7–7.6 mills/kwh

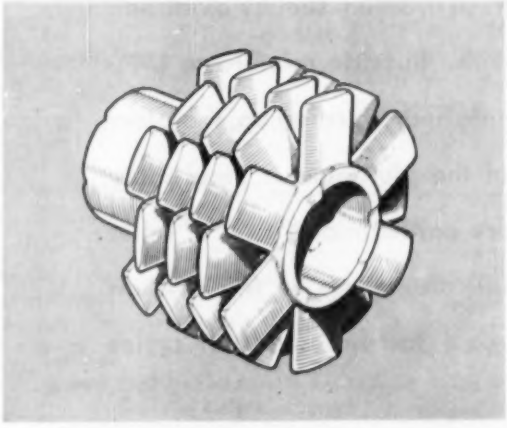


PRESSURE VESSEL shows openings for remotely controlled fuel-handling system (see also top next page) that allows fuel-element replacement while reactor is operating at full power. By staggering fuel-element irradiation, reactivity limitation on burnup can be significantly extended. On-site fabrication of 1,700 ton vessel 13 tons of weld metal

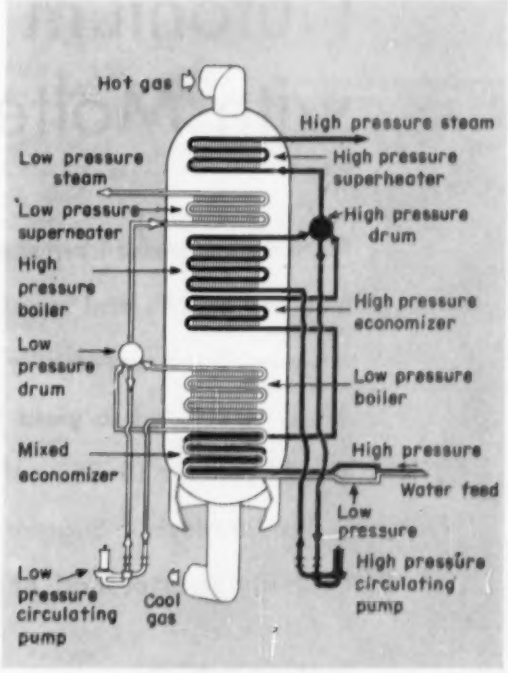


HINKLEY POINT PERFORMANCE will be markedly superior to first round Calder Hall designs. Designers squeeze 1,000 Mw(th) from each of two Calder-type gas-cooled reactors to produce net output of 500,000 kw(e). Although physical size is almost unchanged, power output has been increased 55% over that of Stage I designs because of better heat transfer in both reactor core and steam generators, higher operating pressure and higher gas temperature

Biggest Yet



NEW BOILER-TUBE SURFACE will improve steam-generator heat transfer. New wider stubs welded in staggered array replace stubs used in original Calder Hall unit as surface transferring heat from CO_2 to steam circuit. Old style transverse fins on fuel elements have likewise given way to extruded helical fins



STEAM GENERATOR UNIT, one of six fed by each reactor, has steam-generating capacity 3½ times greater than Calder Hall unit although total volume has increased less than factor of 2. Improved performance comes from new heat-transfer-surface design and more efficient boiler tube spacing

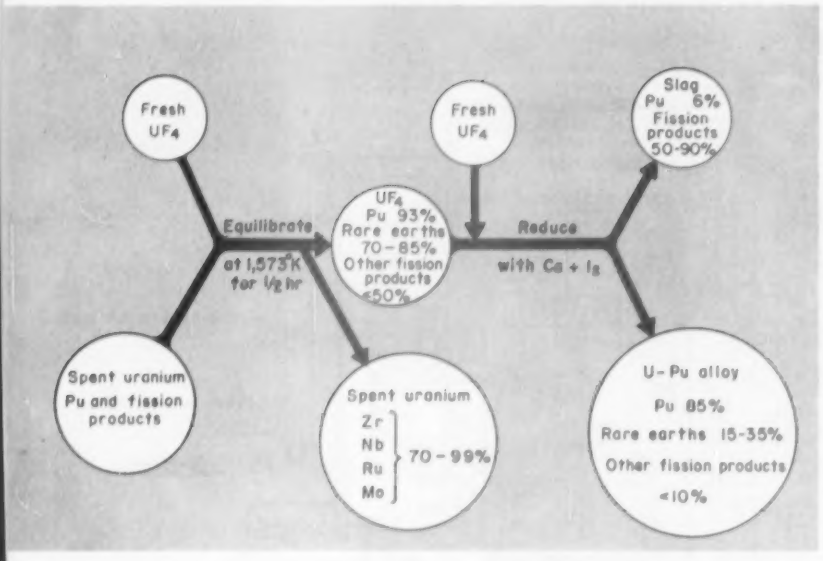

Fresh UF4
Fresh UF4
Slag Pu 6% Fission products 50-90%
Equilibrate at 1,573°K for ½ hr
UF4 Pu 93% Rare earths 70-85% Other fission products ≤50%
Reduce with Ca + I2
Spent uranium Pu and fission products
Spent uranium Zr Nb Ru Mo 70-99%
U-Pu alloy Pu 85% Rare earths 15-35% Other fission products <10%

FIG. 1. Scheme for recycling plutonium from spent fuel to fresh uranium alloy by equilibrating spent fuel with UF_4 and reducing mixed fluorides to alloy. Zirconium and niobium values are based on previous studies (3). Molybdenum is shown on basis of its instability as fluoride. Values indicate that large-scale plutonium recycling is predicted to yield U-Pu alloy only slightly contaminated by fission products

This Scheme is Suggested for . . .

Plutonium Recycling with Molten UF_4

Plutonium transfer from spent to fresh uranium fuel by oxidation into molten UF_4 and reduction of the fluoride mixture to U-Pu alloy has been successfully accomplished. Scaled up, the process is calculated to yield 85% of the plutonium. Final alloy should contain 15–35% of the rare earths and <10% of other fission products. Suggested applications are to the Sodium Graphite Reactor and enriched-core fast-breeder fuel cycles

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ONE FUEL CYCLE suggested for the sodium-graphite reactor involves recycling the plutonium formed in natural uranium and discharging the spent uranium (*1*). Molten fluorides, particularly UF_4, are effective extractants for plutonium (*2, 3*) and are promising as transfer agents in such a cycle. The plutonium recycling is accomplished by equilibrating spent uranium with UF_4 and subsequently reducing the UF_4 to Pu-U alloy using calcium metal as reductant. Fission-product distribution throughout the processing is important from the standpoint of reactor poisoning and methods for remote handling of the prepared alloy.

Another possible application of molten-fluoride processing of uranium reactor fuels is extraction of plutonium from the enriched uranium core used in a fast breeder reactor. Operation of this reactor requires plutonium removal after limited use. In this instance the mixed fluoride or the U-Pu alloy could be introduced into the blanket-processing stream for Pu recovery.

The laboratory-scale research reported here indicates that both applications are feasible. The equilibration-reduction process is shown schematically in Fig. 1. Plutonium and fission-product distribution as calculated from the results of our study are given here as well as in Figs. 2–4. Scaled-up fuel processing is calculated to yield 85% of plutonium originally present in the spent uranium fuel in the prepared alloy together with 15–35% rare earths. Other fission products are present to less than 10%.

Experimental Procedures

In general, the experiments reported here consist of two major procedures: uranium fuel-UF_4 equilibration and mixed-fluoride reduction to Pu-U alloy.

Details of equilibration methods were previously reported (*2*). Prefused fluoride and clean uranium fuel were placed within an outgassed graphite crucible, inductively heated to 1,573° U and held molten for ½ hr while exposed to an argon atmosphere. After cooling, salt and metal phases were separated. Salt phase fractions were reduced individually.

Reduction procedures were substantially those reported previously for pure UF_4 (*4*). Specifically, salt cake from equilibration was finely ground and tumbled. A weighed portion was placed into a vessel containing finely divided calcium metal (Electro-Metallurgical Co.), powdered iodine crystals (Mallinckrodt analytical reagent) and predried fresh UF_4. Another fraction of equilibration salt was analyzed. After thorough mixing of the ingredients, they were introduced into a vitrified magnesia bomb liner. The liner was inserted into a copper-gasketed, mild-steel bomb and the bomb lid securely tightened.

The bomb and contents were placed in an apparatus that permitted withdrawal of a copper-gasketed bolt passing through the bomb lid to fill the bomb with an inert atmosphere. The slotted bolt was tightened by turning a screwdriver inserted into the loading apparatus through a Wilson seal. Bombs were removed from this atmosphere-loading device and centered ¼ in. from the bottom of a 3 × 3-in. induction furnace having approximately 7 turns/in. Power was supplied by a 6-kw high-frequency converter set to deliver about 4.5 kw. These settings were predetermined to reproduce the bomb heating rate for a 10-gm-

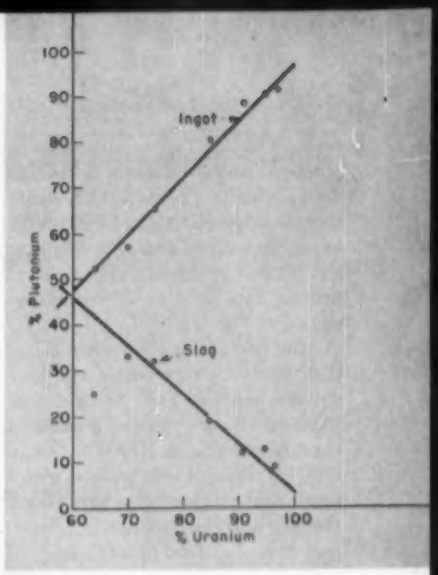

FIG. 2. Yield of plutonium metal vs uranium yield in reduction of fluorides

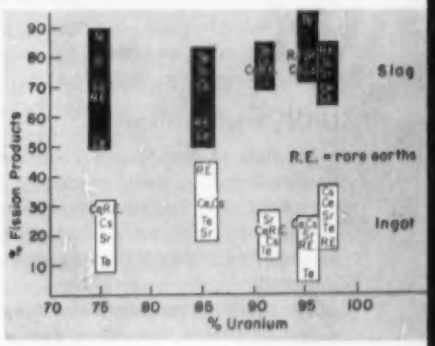

FIG. 3. Fission-product distribution for mixed-fluoride reduction. Boxes indicate limit of error. Activity balances do not total 100% in all cases because of experimental difficulties

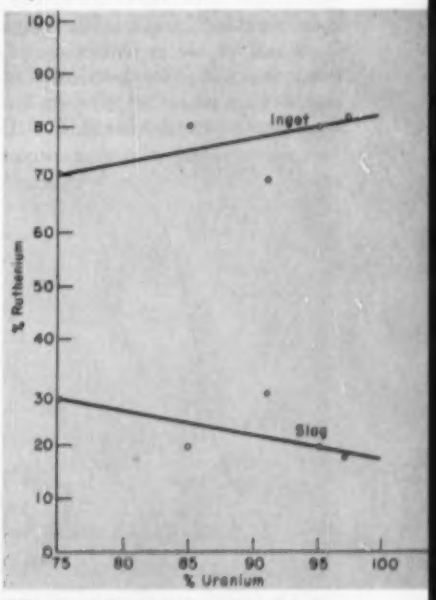

FIG. 4. Ruthenium concentration in reduction ingot vs uranium yield

TABLE 1—Plutonium Redox Experimental Conditions

Equilibration conditions (melts were contained in graphite crucible)			
Wt spent U fuel	42.150 gm		Temperature 1,573° K
Wt of UF_4	4.520 gm	4.520	Wt salt analyzed 0.633 gm
Time of fusion	½ hr	½	Melts contained in graphite crucible

Reduction conditions (MgO-lined mild-steel bomb; no layers formed at top or bottom of charge)

Item	*Reduction 1*	*Reduction 2*	*Reduction 3*	*Reduction 4*	*Reduction 5*
Wt cold UF_4 (*gm*)	12.990	12.241	12.599	12.618	12.325
Wt hot UF_4 (*gm*)	0.373	0.815	0.606	0.539	0.716
Wt Ca metal (*gm*)	4.60	4.70	4.45	4.50	4.55
Wt I_2 (*gm*)	1.52	1.52	1.52	1.50	1.50
Heat period (*min*)	3	4	4	4	4

scale reduction (*4*). Calibration temperature measurements were made with platinum–platinum-13%-rhodium thermocouples touching an empty magnesia liner contained in a bomb with the lid bolt removed. The calibrated heating rate used in all reductions is shown in Fig. 5.

After permitting the system and contents to cool, a pipe cutter was used to cut the bomb in half. Slag and liner fragments were finely ground and then dissolved in an HNO_3-H_3BO_3 mixture. The ingot was washed with 1:3 acetic acid and washings were added to the slag and liner solution. Clean ingots were dissolved in nitric acid. Ingot and slag solutions were analyzed for plutonium by coprecipitation with LaF_3 and for fission products by accepted radiochemical procedures (*5*).

Experimental conditions for all experiments are given in Table 1.

U-UF_4 Equilibration

Uranium–molten-fluoride equilibration studies have been previously reported (*2, 3*). Distribution data obtained from UF_4-uranium fuel melting are reported herein for the purpose of continuity.

The equilibration experiment was designed to permit separating salt portions for more than one reduction. The data are summarized in Table 2.

In this equilibration no effort was made to collect volatile material, but salt cakes were carefully separated from scrubbed uranium to provide clean salt for use in reductions. For this reason salt-phase distribution percentages are somewhat different from those previously reported (*2, 3*). The last column of Table 2 represents the decontamination of the uranium fuel by UF_4 equilibration. Percentages were obtained by multiplying clean, inner uranium values by the factor (introduced uranium fuel) ÷ (clean inner uranium) and subtracting the resulting figure from 100%. The data clearly reveal effective removal of plutonium, cerium, rare earths, strontium, cesium and tellurium. Ruthenium remained in processed uranium metal.

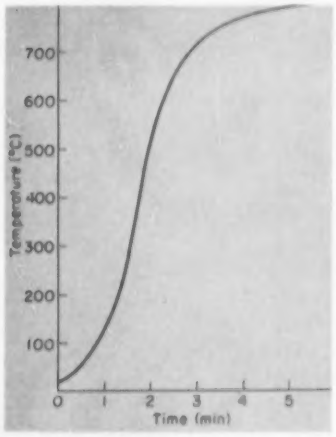

FIG. 5. Calibrated heating rate used for reduction of mixed fluorides

Fluoride Reduction

Uranium tetrafluoride containing plutonium and fission-product fluorides can be reduced to metal alloy by using calcium metal as reductant.

From the fluoride free energies of formation, it is possible to predict that after a successful mixed-fluoride reduction with calcium metal, the major fraction of strontium, cerium and rare earths, extracted into the UF_4 during equilibration, will be found in the reduction slag. The alloy will contain a relatively large fraction of the plutonium originally present in the spent uranium fuel as plutonium is effectively extracted by UF_4. Elements such as ruthenium, whose fluorides are relatively unstable and are not appreciably extracted during equilibration, will be present in very small amounts in the product alloy despite their reduction efficiency. Cesium and tellurium, because of their volatile nature, are expected to show some irregularity.

Disregarding fission products, fluoride-salt reduction can be expressed as

$$\tfrac{1}{3}PuF_3 + \tfrac{1}{2}Ca \rightarrow \tfrac{1}{2}CaF_2 + \tfrac{1}{3}Pu$$
$$\tfrac{1}{4}UF_4 + \tfrac{1}{2}Ca \rightarrow \tfrac{1}{2}CaF_2 + \tfrac{1}{4}U$$

Heat is added to this system by the formation of calcium iodide

$$\tfrac{1}{2}Ca + \tfrac{1}{2}I_2 \rightarrow \tfrac{1}{2}CaI_2$$

Pertinent distribution data resulting from reductions of the foregoing nature are summarized in Table 3. It is inferred from these data that in a 100%-efficient uranium reduction, the alloy would contain ~96% of plutonium originally present as fluoride.

Fission-product distribution resulting from reduction to metal alloy of the mixed fluoride obtained from equilibration also is summarized in Table 3 and Figs. 2–4. These data show that experimental distribution approximates that predicted from thermodynamic values with two exceptions—the major fractions of cesium and tellurium are found in the reduction slag. The volatile natures of cesium and tellurium make plausible their distribution after reduction. These data further disclose that for reduction efficiencies greater than 75%, cerium, rare earths, strontium, cesium and tellurium are found largely in the slag, whereas most of the ruthenium is found in the metal alloy. As the efficiency of the reduction process increases from 70 to 97% for uranium, fission-product-fluoride reduction changes very slightly.

General considerations. The foregoing plutonium recycling data are useful for predicting the probable situation existing in this redox process after transition from a laboratory to an engineering scale.

Consideration of the fluoride free energies of formation as they are correlated with percentage concentration of a given element in the prepared

TABLE 2—Distribution Data for U-UF_4 Equilibration at 1,300° C

	% introduced activity measured				
Element	*Crucible leach*	*Salt-metal interface + outer metal*	*Clean inner uranium*	*Clean salt recovered*	*% activity removed from processed U*
Pu	11	35	2	37	93
Ce	13	27	Trace	31	99+
Rare earths	18	25	Trace	27	99+
Sr	19	23	Trace	42	99+
Cs	3	2	Trace	5	99+
Te	10	38	1	31	86
Ru	Trace	37	29	6	6

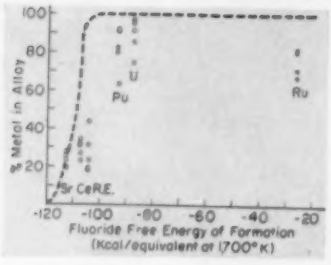

FIG. 6. Metal concentrations in reduction alloy correlated with fluoride free energies of formation

metal alloy permits actual alloy-concentration predictions expected from scaled-up engineering processes. This relationship for data obtained from 10-gm-scale mixed-fluoride reductions is depicted in Fig. 6. Choice of a lower peak temperature displaces the calculated curve (represented by the broken line) to the left. A higher temperature would cause a shift to the right. The broken line is calculated from the equation obtained by the following derivation.

The equation representing the general case for fluoride reduction to metal, using calcium as reductant, is

$$\frac{1}{n}\,MF_n + \tfrac{1}{2}Ca \rightarrow \tfrac{1}{2}CaF_2 + \frac{1}{n}\,M$$

MF_n = any metal fluoride of valence n.

The equilibrium constant K_e for this reaction is

$$K_e = (a_M/a_{MF_n})^{1/n}(a_{CaF_2}/a_{Ca})^{1/2}$$

where n = valence of metal cation and a = activity of species. For high reduction yields, $(a_{CaF_2}/a_{Ca})^{1/2} \approx 1$.

The major reduction process is

$$\tfrac{1}{4}UF_4 + \tfrac{1}{2}Ca \rightarrow \tfrac{1}{4}U + \tfrac{1}{2}CaF_2$$

Thus, moles salt after reduction (CaF_2) = twice moles uranium. For a metal whose concentration is very small

$$a_M \propto N_M \propto \frac{\%M}{\text{moles U after reduction}}$$

where %M is percentage of element that goes into reduced ingot and N_M is mole fraction of M in ingot and

$$a_{MF_n} \propto N_{MF_n} \propto \frac{\%MF_n}{\text{moles } CaF_2 \text{ after reduction}} = \frac{(100 - \%M)}{2 \text{ moles U after reduction}}$$

where $\%MF_n$ is percentage of element that goes into slag after reduction and N_{MF_n} is mole fraction of metal fluoride.

$$K_e = \left(\frac{N_M}{N_{MF_n}}\right)^{\frac{1}{n}} = \left(\frac{2\%M}{100 - \%M}\right)^{\frac{1}{n}}$$

If ΔF_R = free energy of reaction, then

$$\Delta F_R = RT \ln K_e = 2.3RT \log [2\%M/(100 - \%M)]^{1/n}$$

$$\Delta F_R = \Delta F_{CaF_2}/2 - \Delta F_{MF_n}/n$$

Thus

$$\frac{\Delta F_{MF_n}}{n} = \frac{2.3\,RT}{n} \log \frac{(2)(\%M)}{100 - \%M} + \Delta F_{CaF_2}/2$$

The scatter of experimental data plotted for a given ΔF_{MF_n} is the result of the different reduction efficiencies obtained experimentally.

From a theoretical standpoint, as represented by the broken line in Fig. 6 and the free-energy relationship, one can predict that all elements whose fluoride free energy of formation at 1,573° K is more negative than that for UF_4 (88 kcal/equivalent) would concentrate in the salt phase during UF_4-U equilibration. This group includes plutonium, alkali metals, alkaline earths and rare earths. After equilibration, the spent fuel will retain most of the Ru, Nb, Zr and Mo. Reduction to metal alloy using calcium would result in introduction of nearly 100% of extracted fission products into the prepared ingot whose free energies of formation at 1,700° K are more positive than 105 kcal per equivalent (*5*). Alkaline earths concentrate in the reduction slag. Rare earths might concentrate in the slag, but their theoretical alloy concentration shows an appreciable increase over Sr.

In the actual case as indicated by decontamination percentages (Table 2), 93% of the Pu and 99% of the Ce and rare earths are removed from the spent uranium into the mixed fluoride cake resulting from equilibration. A subsequent mixed-fluoride reduction to metal would yield a fresh uranium ingot containing plutonium and fission products in concentrations that can be approximated for those not volatile and whose fluorides are not volatile at 1,573° K by multiplying the decontamination value for a given element by the percent found in the alloy made by reduction. For those fission products that are volatile either as metal or fluoride, ingot concentrations are approximated by multiplying actual percentages found in equilibrated clean salt by those found in the final product.

Such data are calculated from those reported in Table 2 and data for 97% reduction efficiency shown in Table 3. They are depicted in Fig. 1.

TABLE 3—Pu and Fission Product Distribution after Mixed-Fluoride Reduction

Reduction	Uranium alloy yield (%)*	Phase	% of introduced activity measured							Ingot condition
			Pu	Ce	R.E.	Sr	Cs	Te	Ru	
1	75	Ingot	65	31	31	19	27	11	71	Rough
		Slag	32	52	69	81	72	88	29	
2	85	Ingot	80	30	44	25	31	21	80	Well-formed
		Slag	19	52	55	75	69	80	20	
3	91	Ingot	82	23	23	27	21	17	68	Well-formed
		Slag	12	77	78	73	80	84	31	
4	95	Ingot	90	26	18	19	25	6	80	Well-formed
		Slag	13	74	82	81	74	94	20	
5	97	Ingot	91	33	16	23	35	20	82	Well-formed
		Slag	9	67	84	77	65	80	18	

* Experiments in which uranium reduction efficiencies were <75% are depicted only for Pu in Fig. 2. Experimental conditions were similar to those reported.

* * *

This article is based upon studies conducted for the U. S. Atomic Energy Commission under contract AT-11-1-Gen-8.

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Liquid Scintillators In Filter Paper—A New Detector

By JEAN-CLAUDE ROUCAYROL, ERICH OBERHAUSER and RICHARD SCHUSSLER
Medical School, University of the Saar
Homburg (Saar), Germany

Liquid scintillators, in conjunction with a low-dark-current photomultiplier, are particularly efficient for soft beta particles.* On the other hand, filter paper has long been used as a support for radioactive materials because it is either simply convenient or, much more frequently, a necessary element of the analytical process, as in chromatography or electrophoresis.

The only disadvantage of filter paper is that, in the case of soft betas, a large part of the radiation is absorbed. As a remedy, one of us suggested impregnating the filter paper with a liquid scintillator. In this way, some of the energy of the particles that would otherwise be lost in the paper causes scintillations that can be detected all the more easily because the support has become fairly transparent.

Procedure

The inexpensive equipment includes a sample changer, an EMI-6262 photomultiplier supplied with a very stable high-voltage supply† and a preamplifier followed by a commercial scaler.

Drops of aqueous solutions containing C^{14}, P^{32} or I^{131} were dispensed to 2-cm-dia pieces of filter paper with a micropipette. The dry papers were dropped into a solution of phenylbiphenyloxadiazole in toluene (8 gm/l), left there about a minute, removed and brought into the changer. They were set above the center of the photocathode and pressed flat against it to reduce light losses. For long measurements, some extra toluene was added on top of the photomultiplier to keep the paper wet. Since our radioactivity was not soluble in the toluene, no increase in the background was experienced.

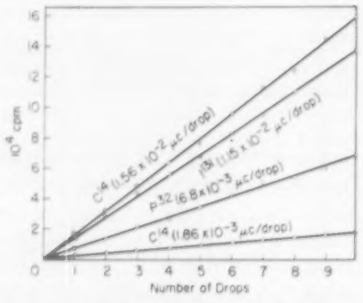


FIG. 1. Drop-wise addition of radioactive solution to filter paper shows linearity of scintillator detection. Aluminum reflector used with S&S 2043a filter paper

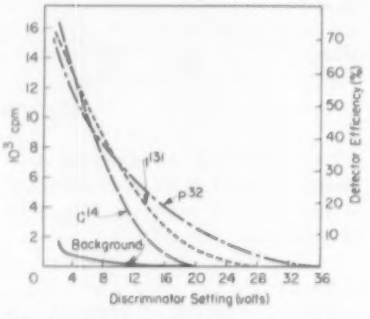


FIG. 2. Influence of discriminator voltage on detector's sensitivity for measuring C^{14}, I^{131} and P^{32}. Aluminum reflector used with S&S 2043a filter paper. Absolute activity is 10^{-2} μc

To test reproducibility and linearity, one drop of solution was dispensed to a first piece of filter paper, two drops to a second, etc. In Fig. 1, the net counting rates are plotted against the number of drops for the three isotopes tested.

Sensitivity

In Fig. 2, the net counting rate or the percentage of the absolute activity is plotted against the lower-level discriminator voltage for the three isotopes tested. It is worth noting that the P^{32}, with a maximum energy of 1.7 Mev, shows a discriminator cutoff voltage less than twice as great as C^{14}, which has less than 1/10 as high an energy. This is a departure from usual spectrometer experience. This is probably caused by the escape of high-energy P^{32} betas from the thin scintillator layer.

A 30-minute counting time for sample plus background means a standard error of 2%. Accepting this error, one calculates from Fig. 2 that the absolute activity needed is minimum for the 6-volt setting and is about 2.5×10^{-10} curies for any of the three isotopes.

Figure 2 also shows that at a 20-volt discriminator setting no pulse originating from C^{14} but about 12% of those from P^{32} and 7% of those from I^{131} are recorded. Counting C^{14} in the presence of either P^{32} or I^{131} is therefore possible. With a 2% standard error in ~30 min, one could measure down to 6×10^{-4} μc of P^{32} and 1.8×10^{-3} μc of I^{131}.

Though any definite quality of filter paper has always given us reproducible results, the different qualities were not found equivalent (Table 1). Thus far we can't tell why. Better paper would, of course, slightly improve our sensitivity.

Pressing the filter paper against the photocathode with a weight whose surface is a good reflector for the wavelengths emitted helps some (Table 2).

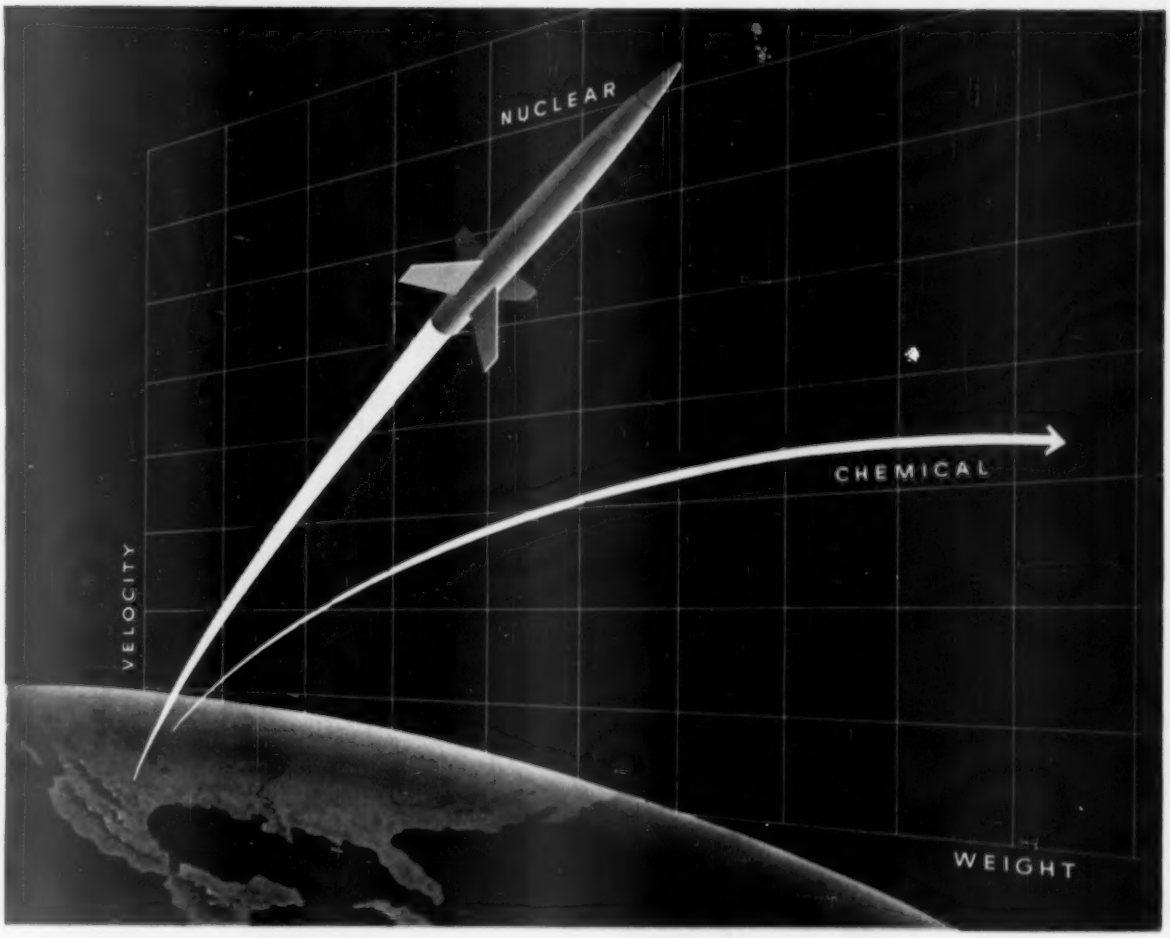
Adding extra pieces of filter paper

TABLE 1—Effect of Filter Paper

*Kind of paper**	*cpm*	*Efficiency (%)*
1104	18,380	100
598	17,897	97.5
602	17,433	95
2043b	16,734	91
2040a	16,021	87
2043a	15,872	86.5
2045a	14,435	78.5
2040b	14,222	77.5
1101	13,916	75.8
Extra thin	13,700	74.6
2045b	12,841	70

* Schleicher and Schull papers except extra thin; Al reflector; C^{14} activity.

* J. C. Roucayrol, E. Oberhausen, *Science* **122**, 201 (1955).
† J. C. Roucayrol, E. Oberhausen, *Die Naturwissenschaften* **42**, 411 (1955).



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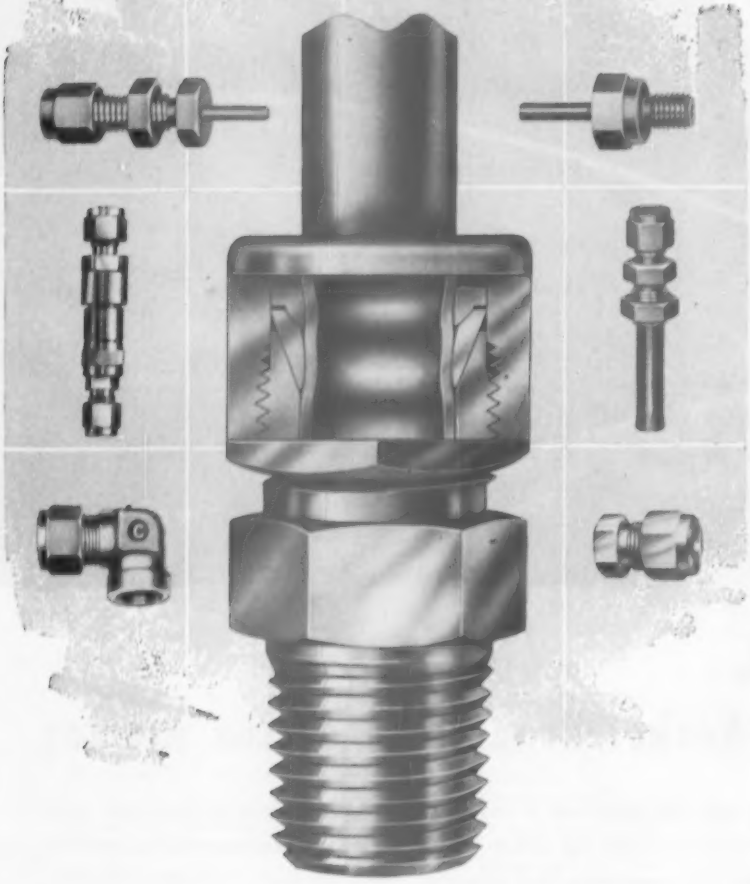

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TABLE 2—Effect of Reflector*

	C^{14}	
Reflecting surface	*cpm*	*%*
Aluminum	20,380	100
Toluene-air	19,550	96
Black paper	15,430	75.5

* Schleicher and Schull 2043a filter paper.

impregnated with the liquid scintillator above or below the radioactivity-loaded one influences our results as shown in Fig. 3.

With all paper except the extra thin, there is, whatever the isotope, a decrease in the sensitivity. With the extra thin paper, if the isotope is a soft beta emitter such as C^{14}, there is also a decrease in the sensitivity whether one sets the extra pieces above (Fig. 3, curve 2) or below (Fig. 3, curve 3) the radioactivity-loaded one. On the other hand, if the isotope is a hard-beta emitter such as P^{32}, there is an increase in the sensitivity by almost one-fourth at the optimum thickness (Fig. 3, curve 1). At first sight this could all be explained in terms of two conflicting phenomena —particle and light absorptions. But one is a little surprised that, with P^{32}, a maximum in the cpm is reached at a paper thickness that lets 95% of the particles through! Can the light absorption be so high? Replacing the extra pieces of filter paper above the radioactivity-loaded one with a solid scintillator that would absorb most of the particles and little light should improve the cpm. Our experiments along this line, though limited, prove

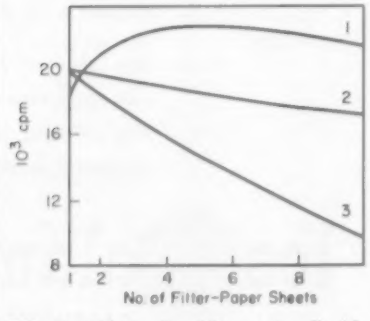

FIG. 3. Effect of adding extra liquid-scintillator-impregnated filter paper above (curve 2) or below (curve 3) radioactivity-loaded paper in case of C^{14} soft betas and (curve 1) P^{32} hard betas

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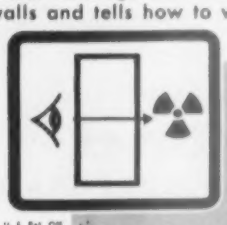

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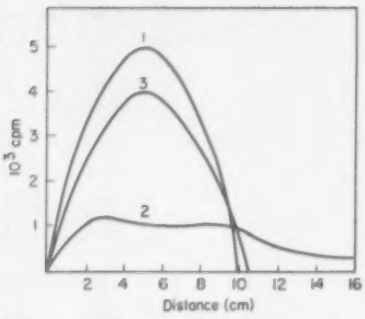

FIG. 4. Distribution of active material in filter-paper strip before scanning (curve 1) and after scanning without (curve 2) and with "fixing" agent added to liquid scintillation (curve 3). Fixing agent prevents migration of activity in paper

that it actually does. However, the background goes up too, and the maximum sensitivity would be expected to be obtained with a thinner solid for softer beta particles.

Provided that it's soluble in a liquid, any radioactive material can be loaded into the filter paper. If it's not soluble in toluene no contamination problem exists; if soluble in toluene one must from time to time wipe the top of the tube with a dry cloth or use another scintillator even at the cost of a loss in efficiency ratios.

A different solution of importance to anyone engaged in chromatographic or electrophoretic analysis on paper strips is to move the support continuously before the detector. With no fixing agent‡ admixed with the scintillator, a movement of the activity in but not out of the filter paper occurs (Fig. 4, compare curves 1 and 2). With some fixing agent, practically no movement, only a slight decrease in the cpm related to the higher self-absorption of the scintillator is observed with a G-M counter (Fig. 4, compare curves 1 and 3) but not with a photomultiplier.

Since the technique described here is just as handy and reliable but appreciably more sensitive than good G-M or even flow counting, it should replace them in many laboratories. Because it can be adapted to continuous scanning, it should also answer the particular needs of anyone engaged in chromatographic or electrophoretic analysis on paper strips. These remarks have special significance when weak sources of soft beta particles are dealt with, a common occurrence in biology.

‡ High-viscosity solution that admixed with the scintillator slows down its flow but doesn't quench its fluorescence.

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	B1194	3" x 1⅜"	Electrostatic	Electromagnetic	16 KV	10⅜"
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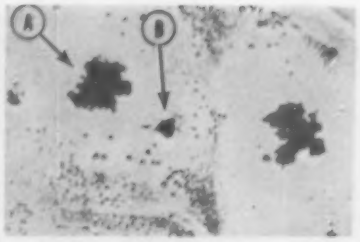

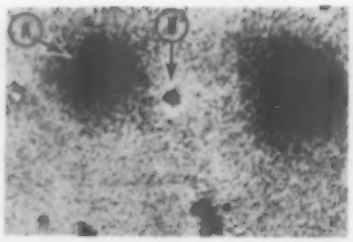

SHADOW-AUTORADIOGRAPHY of beta-active water sample. Photomicrograph (left) shows particle A to be ~30μ wide and ~5μ high and an aggregate of smaller particles; particle is relatively flat, as it does not cast a very long shadow (shadows are white areas). Particle B, about 12μ wide and 13μ high, is not an aggregate. Autoradiogram (right) shows that A is radioactive and B is not. Radioactivity is only associated with aggregates

Shadow Autoradiography of Beta-Emitting Particles

By N. L. DOCKUM and R. BORASKY
Hanford Atomic Products Operation, General Electric Company
Richland, Washington

Radioactive particles in water samples or collected by impaction methods from air samples can be quantitatively analyzed for beta concentration by spot-diameter autoradiography.* The physical characteristics of the particles may be determined by shadowing the samples and examining them in the optical microscope before autoradiography. The combined methods are termed "shadow-autoradiography."

Droplets of a water sample to be examined are spread on a clean dry microscope slide and allowed to dry. The specimen is shadowed with chromium at an acute angle,† noting the angle of shadowing, so that particle size can be determined later. The shadowed slide is next examined in the optical microscope and areas that include particles of interest are recorded by stage micrometer readings and by photomicrography.

Following the microscopic examination, a section of 5-μ NTB stripping film is floated over the sample and allowed to dry. This latter step is performed in a darkroom using a Series 1 Safelight filter. The slide bearing the particles and the emulsion is placed in a light-tight box with a dessicant for a suitable standardized time for exposure at 3° C.

The exposed slides are developed in D-19 developer for 5 min, washed, fixed, dehydrated and cleared, and a coverslip is mounted over the emulsion. The selected areas are re-examined in the microscope. If they contain spot diameter darkenings, they are photographed to give a second set of photomicrographs to compare with those obtained before autoradiography. Radioactivity levels are determined by the spot-diameter method,* where a quantitative straight-line function was found to exist between the sums of the spot diameters or a single spot diameter and the total concentration in each autoradiogram.

The illustration shows a photomicrograph and autoradiogram of the same area obtained from a water sample containing beta emitters. The area was chromium-shadowed at a 20-deg angle.

This method could be used as an autoradiographic technique for analysis of radioactive fallout particles in rain water, drinking water or samples of underground water. It is being used to localize deposited radioactive particles in sections of lung. This technique can also be used for localizing radioactive particles in sections of insects, algae and fish.

* * *

Acknowledgement is made to E. J. Coleman and G. Vogt of the Biological Analyses Operation for their technical assistance. The beta-emitting particles were supplied by D. Willard of the Pharmacology Operation. This paper is based on work performed for the U. S. Atomic Energy Commission under contract W-31-109-Eng-52.

* N. L. Dockum, J. W. Healy, *Stain Technology* **32**, 209 (1957).
† W. T. Dempster, R. C. Williams, *Anatomical Record* **96**, 27 (1946).

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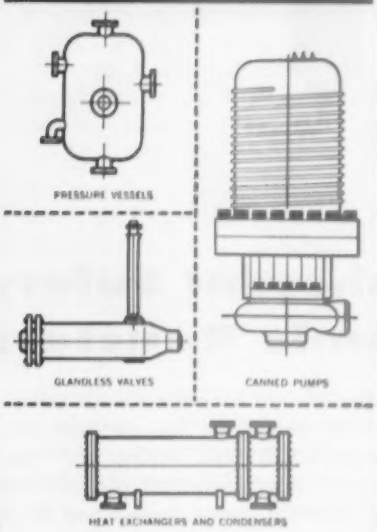

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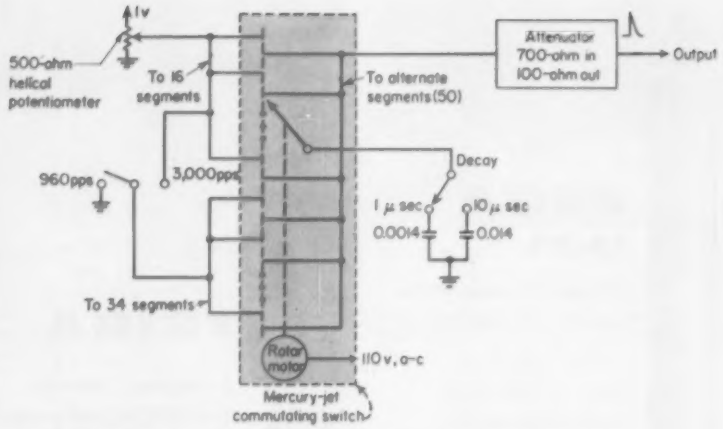

FIG. 1. Simplified schematic for high-repetition-rate mercury pulser

High-Repetition-Rate Mercury Pulser

By L. COSTRELL

National Bureau of Standards, Washington, D. C.

Mercury-relay-type pulsers are widely used for the generation of rapidly rising exponentially decaying pulses. The 60-pulse/sec repetition rate of conventional mercury relay pulsers is adequate for most purposes, but in some applications a higher rate is desirable. Figure 1 shows a simplified schematic of a high-repetition-rate mercury pulser. The pulser uses a 3,600-rpm mercury-jet commutating switch* with 100 commutator segments (see Fig. 2).

The pulse-forming capacitor is charged through a commutator segment and is discharged on the next segment through the input resistance of the attenuator, giving an exponentially decaying output pulse. This charging and discharging on alternate segments occurs 50 times per revolution of the mercury jet so that a repetition rate of 3,000 pulses/sec is obtained. With the particular mercury switch used, one out-of-phase extraneous pulse occurs for about every 200 legitimate pulses.

The pulser is used as a "sliding" pulser with a motor-driven helical potentiometer for calibration of window widths of pulse-height analyzers.

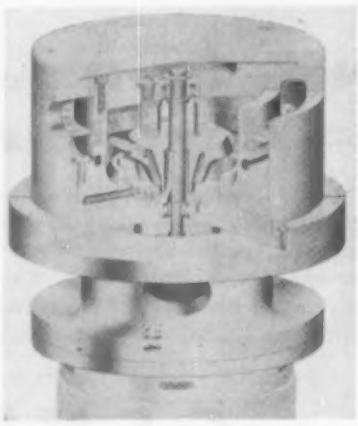

FIG. 2. Mercury-jet commutating switch uses rotating jet of mercury to sequentially connect each of the stationary contacts through a low-resistance path to common pole. External drive turns centrifugal pump, which lifts mercury from reservoir and ejects it at pins in form of fine, high-velocity stream from nozzle. Spent mercury is recycled

* Delta switch, manufactured by Detroit Controls Corp., Redwood City, Calif.

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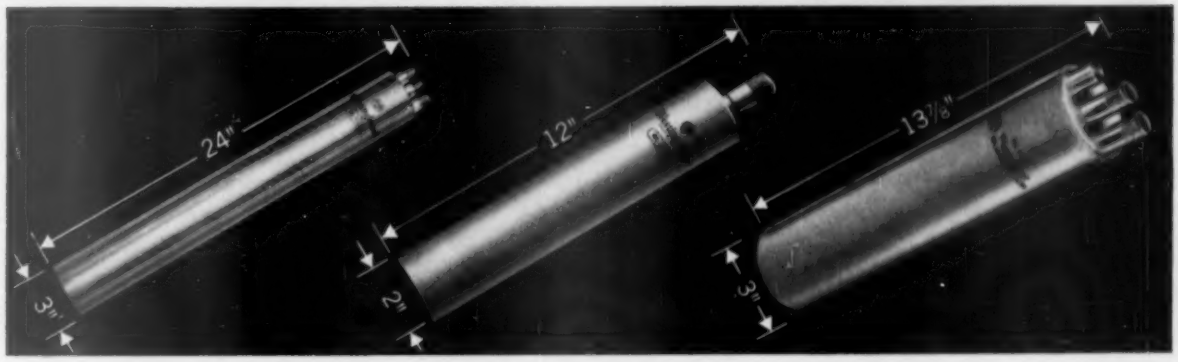

WL-6377 Compensated Ion Chamber: Electrical compensation—guard ring design. All-magnesium construction—B^{10} coated electrodes. Thermal neutron sensitivity: 4.0×10^{-14} amps/nv. Gamma sensitivity: 3.0×10^{-11} amps/R/hour. Operating thermal neutron flux range: 2.5×10^{2} to 2.5×10^{10} nv. Passes Bu Ships 40T9 for vibration and MIL-S-901 for shock.

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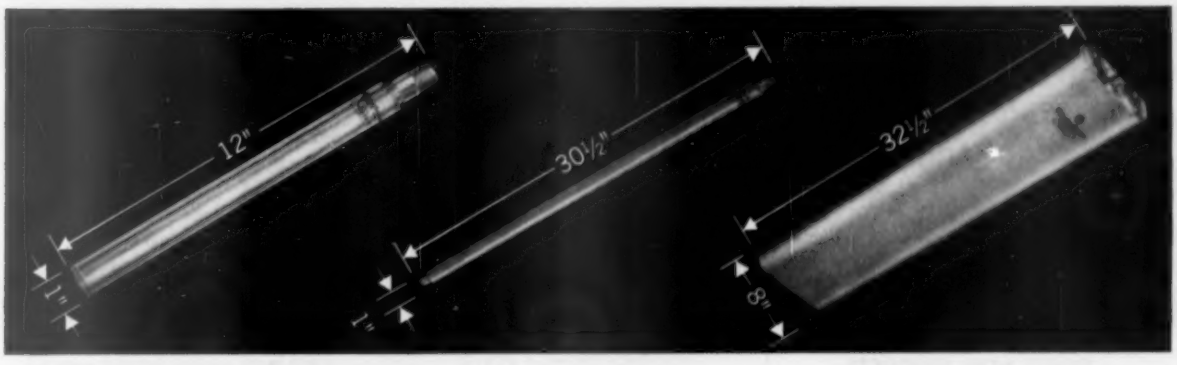
WL-6837 Uncompensated Ion Chamber: Guard ring design. All-aluminum construction—B^{10} coated electrodes. Thermal neutron sensitivity: 4.4×10^{-14} amps/nv. Gamma sensitivity: 5.0×10^{-11} amps/R/hour. Operating range: 2.5 $\times 10^{4}$ to 2.5×10^{10}nv. Passes MIL-STD-167 (Type 1) for vibration and MIL-S-901 for shock.



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Beryllium-Hazard Detection Using Polonium-210 Alphas

By R. GOLD
Armour Research Foundation of the Illinois Institute of Technology Chicago, Illinois

Present chemical techniques for analyzing minute amounts of toxic air-borne beryllium are involved and time consuming. A method utilizing the high specific activity of Po^{210} alpha decay has been developed.

Samples of air-borne beryllium dust are collected on filter paper and exposed to a flux of Po^{210} alpha particles (see Fig. 1). The gamma-ray yield of the $Be^9(\alpha, n\gamma)C^{12}$ reaction can then be used to analyze the beryllium content of the filter paper in 5–10 min. The predominant 4.43-Mev gamma transition to the C^{12} ground state is detected with NaI(Tl) crystals.

Ideally, the voltage pulses from the 4.43-Mev gammas and those from the Po^{210} 0.8-Mev gammas should have a ratio of about 5.5. In practice, however, a large portion of the energy of the 4.43-Mev gamma is lost, and most pulses are less than maximum. Furthermore, spurious pulses occur due to "pile-up" of the 0.8-Mev gammas. For a 5-curie Po^{210} source and a 3-in. NaI(Tl) crystal, the pulse rate would, if uniform, correspond to the detection of one 0.8-Mev gamma every ½ μsec. As the resolving time of a NaI(Tl) crystal is only 0.25 μsec, one can expect a considerable pile-up of the 0.8-Mev gammas. The counting rate due to pile-up is still appreciable even at an energy region corresponding to 4.0 Mev.

One could, however, then use an integral-bias technique to detect the 4.4-Mev gammas while discriminating against most of the 0.8-Mev pile-up. However as the integral discriminator voltage is lowered to collect the degraded 4.5-Mev pulses, the upgraded 0.8-Mev pulses are also collected with a resultant increase in background counting rate. On the other hand, background counting rate decreases with increase of the integral bias, but with a corresponding sacrifice in absolute counting.

The discriminator used is a modified version of that developed by Kandiah.* It has a lower response limit of approximately 0.1 volt to negative pulses. The principle advantage of the low-voltage discriminator lies in the fact that it eliminates the need for a linear amplifier and thereby limits whatever "pile-up" that occurs to the crystal itself. The loss in true signal is significant as the discriminator bias level is increased. (See Fig. 2.)

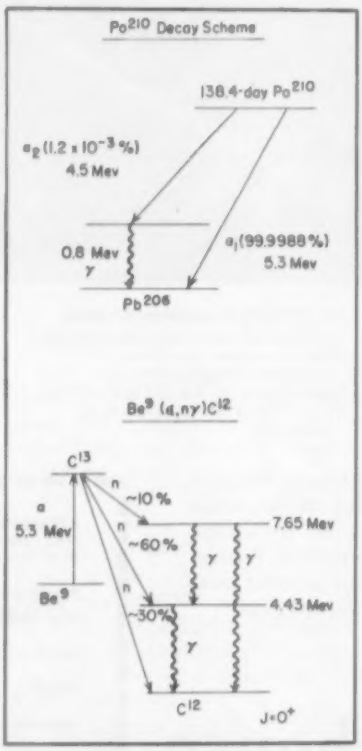


FIG. 1. Decay scheme for Po^{210} and reaction $Be^9(\alpha, n\gamma)C^{12}$

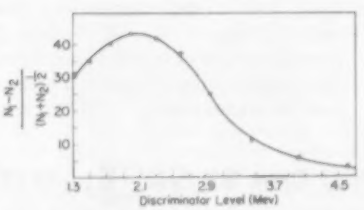
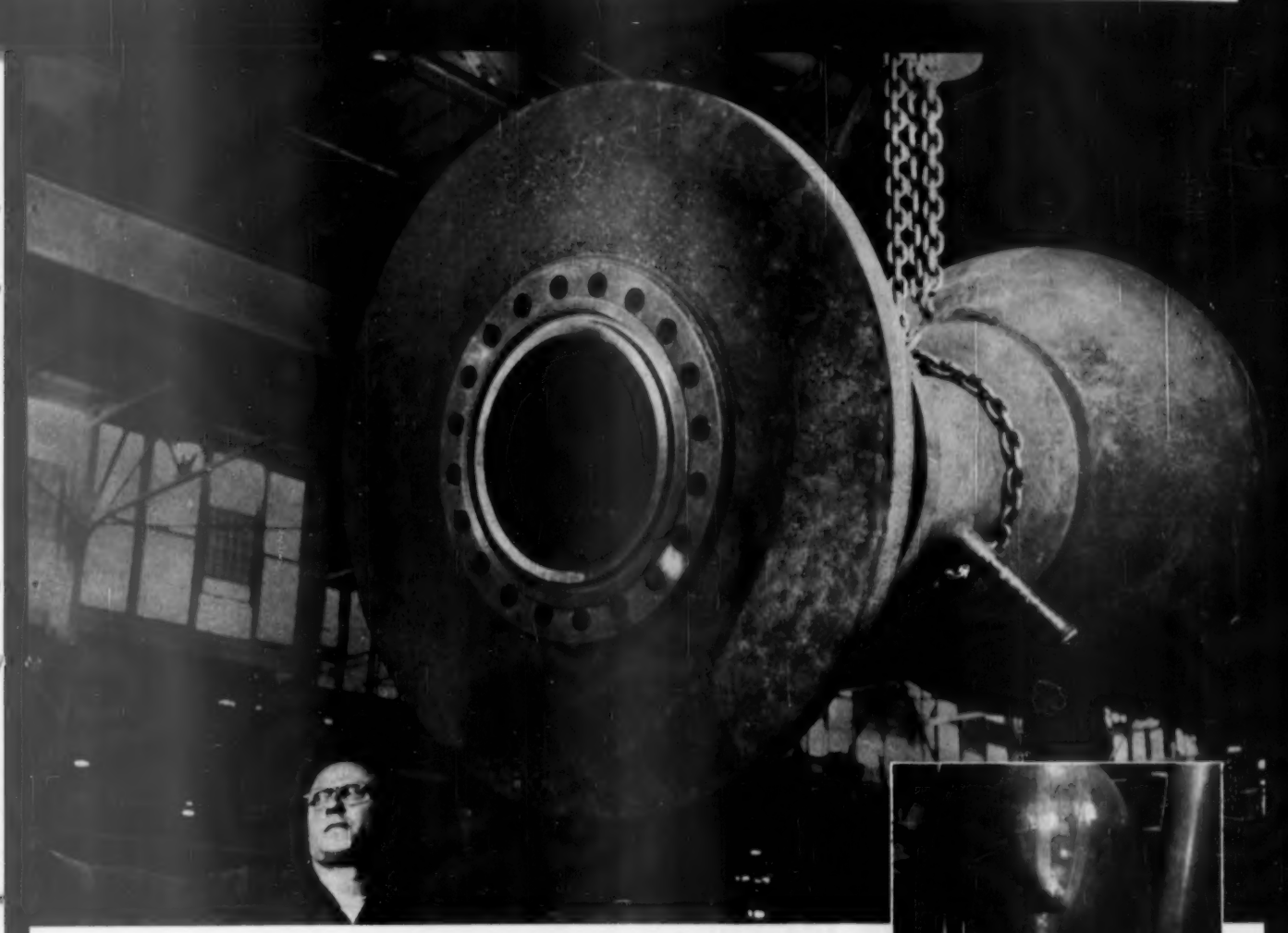


FIG. 2. Reciprocal of fractional error as function of discriminator level. Most statistically reliable data obtained at 2.1 Mev

* K. Kandiah, *Proc. I.E.E.* **101**, Part II No. 81, 239 (1954).



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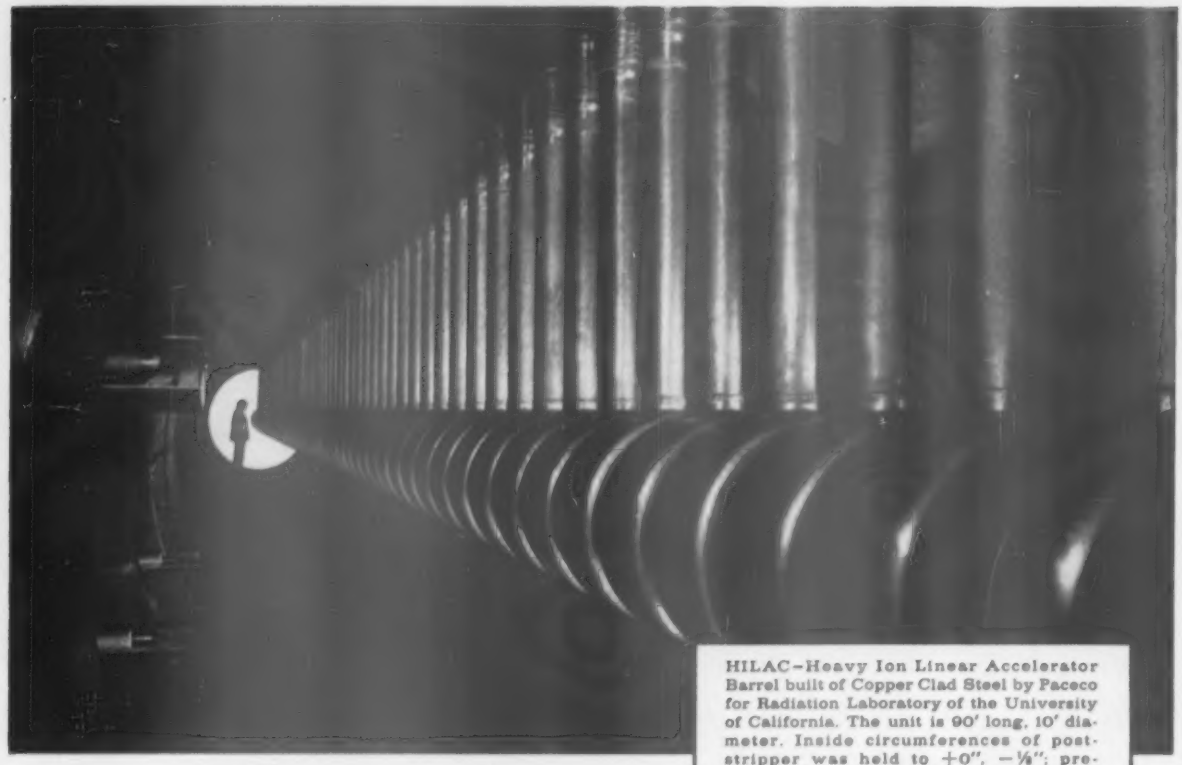

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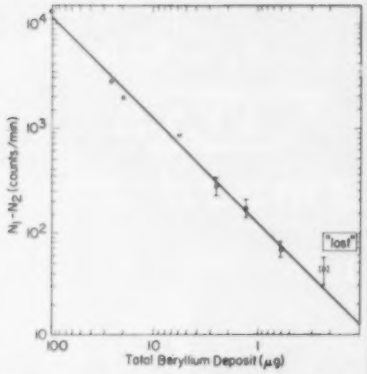


FIG. 3. True pulse rate ($N_1 - N_2$) for $Be^9(\alpha, n\gamma)C^{12}$ reaction. In addition to 5-min background count, each point represents 5-min counting period. 0.25-μg deposit was lost in attempt to get more accurate value of beryllium content

At this integral-bias level, 0.1–100 μg beryllium deposits on Millipore filter paper were investigated with a 2.6-curie Po^{210} source and a 3 × 3-in. NaI(Tl) crystal. The samples were sent to the New York Operations Office of the AEC for absolute beryllium-content analysis. The results are displayed in Fig. 3. Samples of 0.1

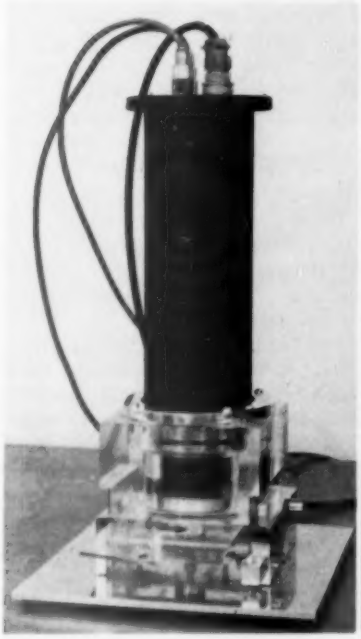
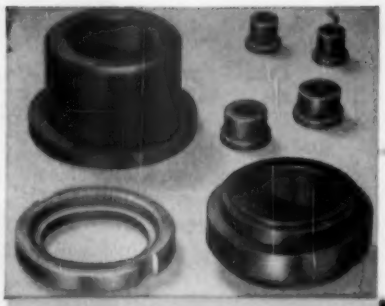


FIG. 4. Beryllium detection unit. Po^{210} alpha source is sealed from atmosphere with O-rings at all openings. Lucite construction facilitates loading source. Beryllium filter paper sample rests in slide carriage, which may be moved when handle is lifted. Above slide carriage are 3-in. crystal, photomultiplier and cathode follower



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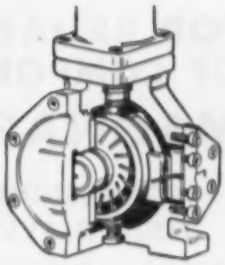

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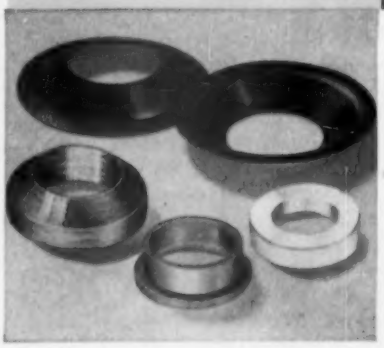

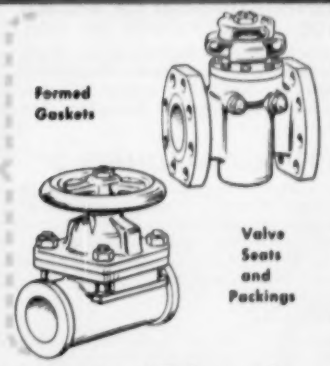

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μg could not be distinguished from background.

Figure 4 shows a prototype detector.

It should be pointed out that the correlation presented holds for Millipore filter paper deposits. Such monotonic relationships were not obtainable with Whatman-type filter paper. It is believed that this difference is attributable to the manner in which surface distributions of beryllium deposit are presented to the Po^{210} alpha flux.

* * *

The author is indebted to L. Reiffel and C. A. Stone for their constant guidance throughout the course of this development program, and also to R. G. McCarty who initially conceived the idea for this technique and performed preliminary measurements. This work was supported by the U. S. Atomic Energy Commission under Contract No. AT(11-1)348.

How to Save Time When Counting Weak Samples

Accurate counting of weak samples is usually a time-consuming matter. Considerable analysis and experiments have been devoted to determining what procedure produces the best precision with the smallest expenditure of time. Enrico Petrozzi of the Rome, Italy, branch of EKCO Electronics suggests a procedure that combines the speed of the "constant-background" method and the accuracy of the "interleaved-measurements" method. He has devised a way to determine background and counter efficiency with one observation.

The interleaved-measurements method is the most painstaking. A background measurement is made between each pair of samples, and the before-and-after average is used to correct each sample count. A lot of time is used in counting a nearly constant background. Faster (but less accurate) is the method of taking a background count after each n samples and assuming that any variation is linear with time.

Petrozzi separates the background count into two factors: the equivalent background activity B and the efficiency η_b of the counter in responding to it. Likewise the sample count is a product of activity S and efficiency η_s. In weak sample operations, he points out, one can expect B to stay relatively constant while the two efficiencies change in response to changing circuit voltages, dark currents, etc. In general they do not change in the same manner since there is no simple relation between background and sample spectra. However, it may be possible to find values of circuit parameters such that the two efficiencies *do* change in the same manner—that is, they stay in the same ratio. After this has been done, a single count with a standard source of the isotope that one is counting is sufficient to determine both the background and the counting efficiency. One is spared the lengthy background count without the usual loss of accuracy.

For example, suppose that we have initially a total counting rate of 1,000 and a background of 10 cps. Later the same standard gives us a total counting rate of 1,030 cps. We conclude immediately that the counting efficiency for both sample and background have changed by 3% and accept a background count for the second standardization of 10.3 cps. Assuming a linear rate of change as a first and usually good-enough approximation, we have determined the background for each count taken between the two standardizations.

In a series of tests Petrozzi has varied the phototube and discriminator voltages of a scintillation counter and found regions in the resulting series of curves where η_s/η_b is constant. He assumes that it is probably possible to find such operating regions for most other types of scintillation counting equipment and with nuclides other than the four he worked with. Since his tests were carried out in Rome, where there is much mesothorium and potassium in masonry materials, he says that it will be interesting to see whether η_s/η_b remains constant over wider or narrower limits in regions where the background is lower or has a different spectrum.

Use of this method introduces a third criterion among counting methods. For maximum sensitivity one chooses parameters to make R_t/R_b a maximum where R_t is total counting rate and R_b is background rate. For

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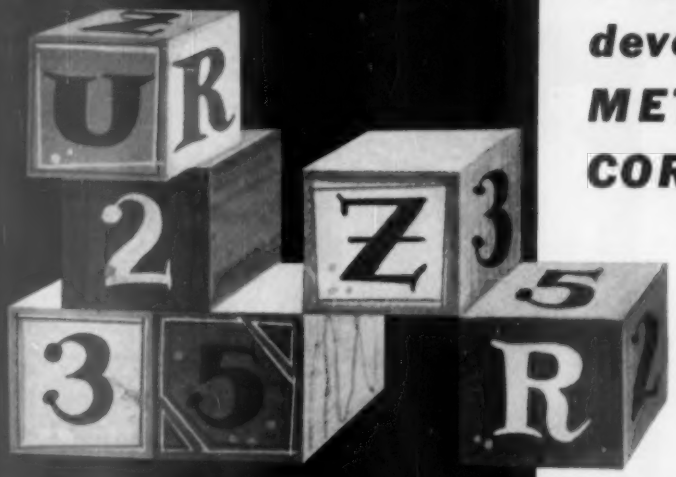

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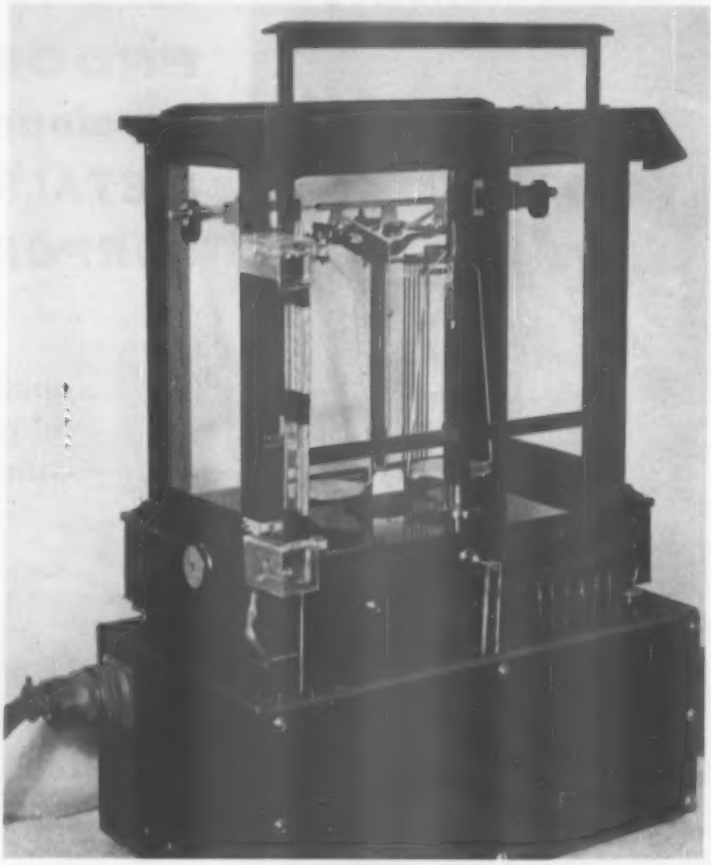
minimum counting time R_t^2/R_b must be a maximum, and for the present method R_t/R_b must be constant.

A. E. Brandt of the AEC's New York Operations Office indicates that his group uses a similar method. They combine two background, three standard and 65 sample counts in a unit to determine beta activity in fallout samples.



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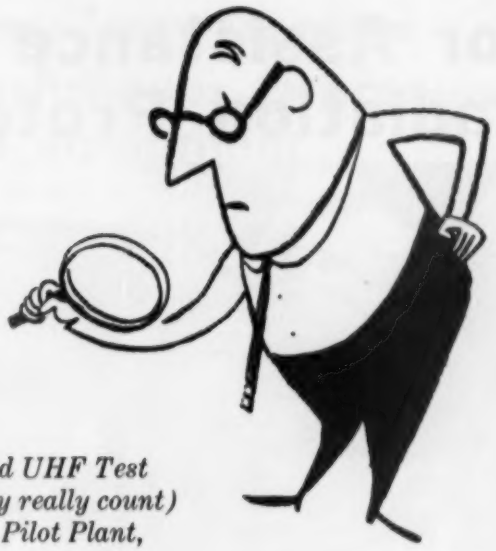

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TECHNICAL BRIEF

Method detects Be metal in Be_2C. Its thermal stability recommends beryllium carbide as a reflecting-moderating material for high-temperature nuclear reactors. To measure its stability under irradiation, L. Silverman, K. Trego and M. Feldman* of Atomics International, Canoga Park, Calif., have developed a method for analyzing the amount of submicrosize beryllium metal in irradiated Be_2C. The technique is also applicable to submicrosize Be particles in powdered Be metal.

As the first step in the analysis, Be_2C is converted to hydroxide $Be(OH)_2$ by steam under pressure. Submicrosize Be, not attacked by steam, is then detected by its reduction of ferric ion (macrosize Be metal does not reduce ferric ion) and subsequent colorimetric determination of ferrous iron by dipyridyl reagent. As little as 0.1 μg of free Be metal in Be_2C can be detected.

Be_2C samples were irradiated for 34 and 64 μa-hr with 40-Mev particles in the 60-in. cyclotron at Berkeley, Calif. It is estimated that one free beryllium atom is formed per four incident alpha particles.

Two procedures were used for examining irradiated Be_2C. In the first, 20-mg samples were boiled under reflux condensers until the black carbide disappeared. Decomposition required up to two weeks of refluxing. In a parallel run with Be metal, no metallic Be dissolved in the water, as determined by the curcumin test for Be ion proposed by Kolthoff.

In the second procedure, 20-mg samples of Be_2C with 6 ml of water were heated in sealed Pyrex tubes. Suitable conditions for decomposing the carbide and not attacking the submicrosize elementary Be were found to be heating either at 200° C for 20 hr or at 225° C for 16 hr.

* PRESENT ADDRESS: Westinghouse Electric Co., Pittsburgh, Pa.

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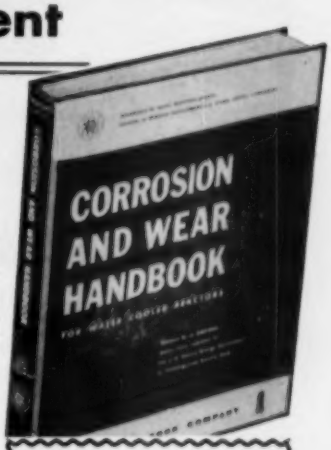
for Water Cooled Reactors



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This authoritative source gives you background information, procedures, test data, and special studies relating to problems of corrosion and wear in nuclear reactors using high-temperature, high-purity water as a heat-transfer medium. Here you will find a discussion of the nuclear reactor plant and its relationship to conventional powerplants, considerations in choosing materials, fundamental aspects of corrosion and wear, and pure-water technology. Also included are tabulated data and detailed information for use in actual design work, plus basic facts on methods of testing, inherent corrosion and wear resistance of various materials and special types of corrosion.

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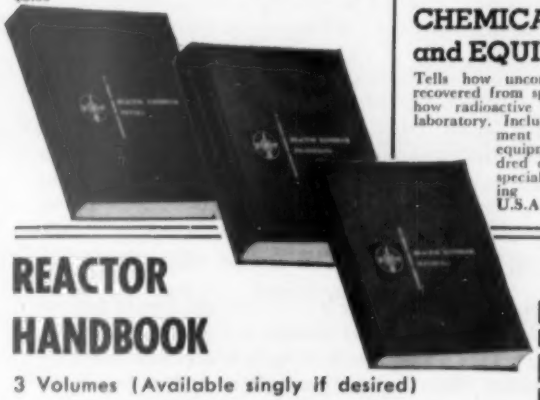

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NUCLEAR ENGINEERING NOTES

AEC Regulation for Fissionable Shipments The AEC has proposed a regulation for fissionable shipments governing the amount of enriched uranium, plutonium, or U^{233} that a licensee may transport, or deliver to a carrier, in a single shipment. The limits on amount would be:

	Transported by licensee	*Delivered to carrier*
Enriched U	350 gm U^{235}	100 gm U^{235}
Plutonium	200 gm	60 gm
Uranium-233	200 gm	60 gm

Formulae are provided in the proposed regulation for determining the limit in the case of a mixed shipment. A licensee desiring to make shipments in excess of these limits would be required to obtain the approval of the AEC as is the practice now. Thus, the main import of the proposed regulation seems to be to obviate the necessity for specific AEC approval for small shipments while retaining the present practice for large shipments of fissionable materials, e.g., entire reactor cores.

The reason for the considerably lower limits listed under the second heading is that a carrier might receive a number of shipments from different licensees. The proposed regulations would provide, however, that a licensee may deliver as much material to a carrier as he may transport himself if sufficient controls are provided to ensure that the total amount shipped by the carrier is within the prescribed limit.

The proposed regulation (10 CFR Part 71) was published in full in the Federal Register for September 21, 1957.

DuPont Evaluates D_2O-Natural U This spring one of the country's largest companies in the nuclear field brought its talents to bear, for the first time, on the problems of commercial power reactors. At the request of the AEC, Savannah River Laboratory operated by the DuPont Company has begun a program to work out the best design for a heavy-water-moderated natural-uranium power reactor (NU, Dec. '56, R5). The program is aimed at producing a report in 1960 containing the information necessary for the final design and construction of a full-scale plant (however, the AEC-DuPont agreement makes no commitment for the actual construction of a power reactor).

The study makes use of the laboratory and research facilities at Savannah River and employs a total of 25 technical people from the Savannah River plant and DuPont's Wilmington office.

The method of attack has been first to make an engineering survey of the various possible designs, then to do more detailed analysis of the most promising ones, and finally to start experimental work where existing technology is lacking. The group's first quarterly progress report,* included rough figures for a D_2O-cooled reactor to be used as a comparison design and some early experimental results.

Conceptual designs. Given that the reactor is to use natural-U solid fuel and a D_2O moderator, the various combinations of possible fuel material, fuel clad, coolant material and steam generation schemes add up to a large number of different designs to be evaluated. The DuPont group has begun a systematic survey of this family of designs. All the reactors considered to date have a standard output of 100,000 kw(e) and produce light-water steam with an intermediate heat exchanger. Because of the lower cost and greater experience available for natural U metal, this material rather than UO_2 was chosen as the fuel material for the initial calculations.

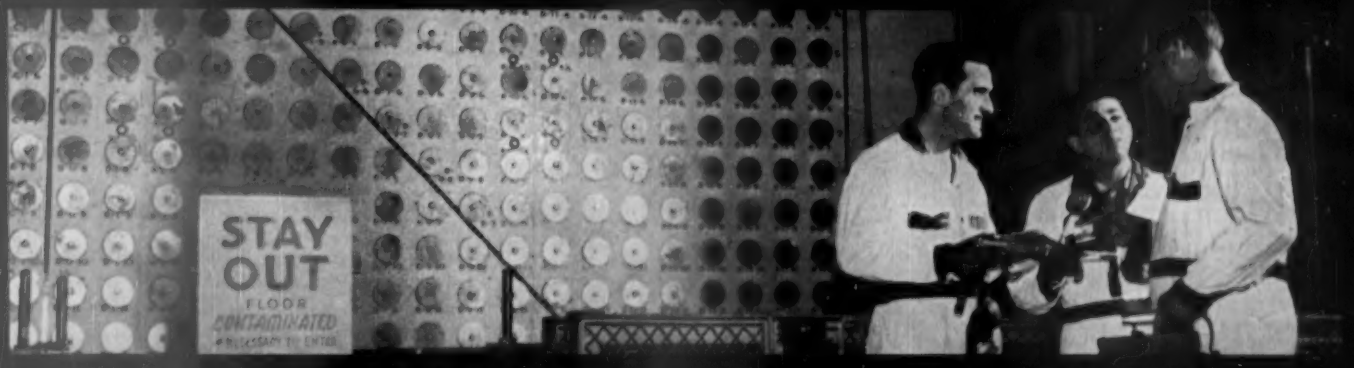
The group divides the reactor types into "pressure-shell" and "pressure-tube" reactors. In the former the primary-system pressure is maintained by an ordinary pressure shell; with the latter the pressure is held by fuel-element sleeve tubes that pierce the core. In the second arrangement the moderator can be at a much lower pressure than the primary system pressure (for an example see p. 165 this issue).

• With respect to the pressure-shell reactor variety, most of the group's attention

* D. F. Babcock, DP-232(July 1957)

ON THE WAY!

the closed-cycle gas-cooled reactor



Above: The Brookhaven reactor where Ford Instrument engineers are conducting irradiation test for the GCR.

A prototype closed-cycle gas-cooled reactor for land/sea power can be ready within five years

Probability has replaced supposition. Research indicates that a low cost, compact prototype nuclear plant of high thermal efficiency and maximum safety can be ready by 1963.

The first to benefit from development of this concept should be electric utilities and the shipping industry. In addition to economy, efficiency, size and safety, the GCR concept also has the advantages of simplicity and re-fueling ease.

While working for the Atomic Energy Commission, Ford Instrument and other AEC contractors have been greatly encouraged by feasibility studies and experimentation on the closed-cycle gas-cooled reactor.

Right now, research is being conducted at Brookhaven National Laboratory where Ford Instrument is irradiating fuel element specimens. The company is also developing and fabricating a specialized control drive for this reactor type—as well as examining control rod and reactor materials, performing dynamic tests and completing studies in numerous other areas.

Convinced of GCR's superiority, Ford Instrument has concentrated on this reactor concept, to the exclusion of all others, for the past three years. For further information, write to Nuclear Sales, Ford Instrument at the below address.

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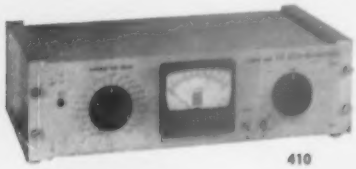
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MODEL 412, **Single range** from 10^{-13} to 10^{-7} ampere. **Drift** < 5% of a decade in 24 hours. **Accuracy** 0.2 decade. **Rise time** to 90% of final value is 6 seconds for currents between 10^{-13} to 10^{-12} ampere and < 2 seconds for currents between 10^{-12} and 10^{-7} ampere — with 5000 mmf across input. **Full Scale Output,** six volts; noise < 30 mv rms. $465.00

MODEL 411, 17 **Ranges** from 10^{-11} to 10^{-3} ampere full scale (two per decade). **No Switching Transients. Input grid current** < 5×10^{-14} ampere, input drop < 5 mv. **Drift** < 2% of full scale per week on all ranges. **Accuracy,** 2% of full scale on 10^{-3} to 10^{-7} ranges, 4% on other ranges. **Rise time** to 67% of final value is 4 seconds on 10^{-11} range, 1 second on 10^{-10} range, with 5000 mmf across input. **Full Scale Output,** ten volts; noise < 2% of full scale. $535.00

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MODEL 411-C Identical to 411 except for meter-relay. $670.00.

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MODEL 200B, Battery operated, portable. **Ranges,** Eight: 8, 20, 80, 200, 800 mv and 2, 8, 20 volts full scale. **Drift** < 1 mv per hour. Not sensitive to temperature variation. **Battery Life** 400 hours or better. $355.00

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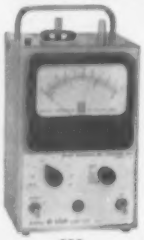
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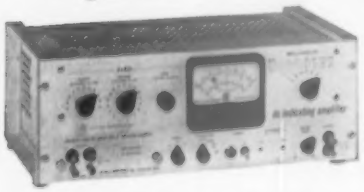

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has been concentrated on a design using pressurized heavy-water coolant. In fact, the group intends to use this design as a "standard case" for evaluating the remaining concepts. The approximate design numbers are shown in the table below. The heavy-water coolant flows first through the moderator space and then through the fuel elements. The pressure vessel is 34 ft long and 12.7 ft in diam. The natural-metal fuel elements have the form of tubes 1.50 in. i.d., 0.25 in. thick and 15 ft long. The tubes are zirconium-clad and are surrounded by zirconium housings 2.90 in. i.d. and 0.060 in. thick. The maximum fuel temperature would be 563° F at the tube surfaces and 959° F in the interior. The lattice would contain 340 single-tube elements.

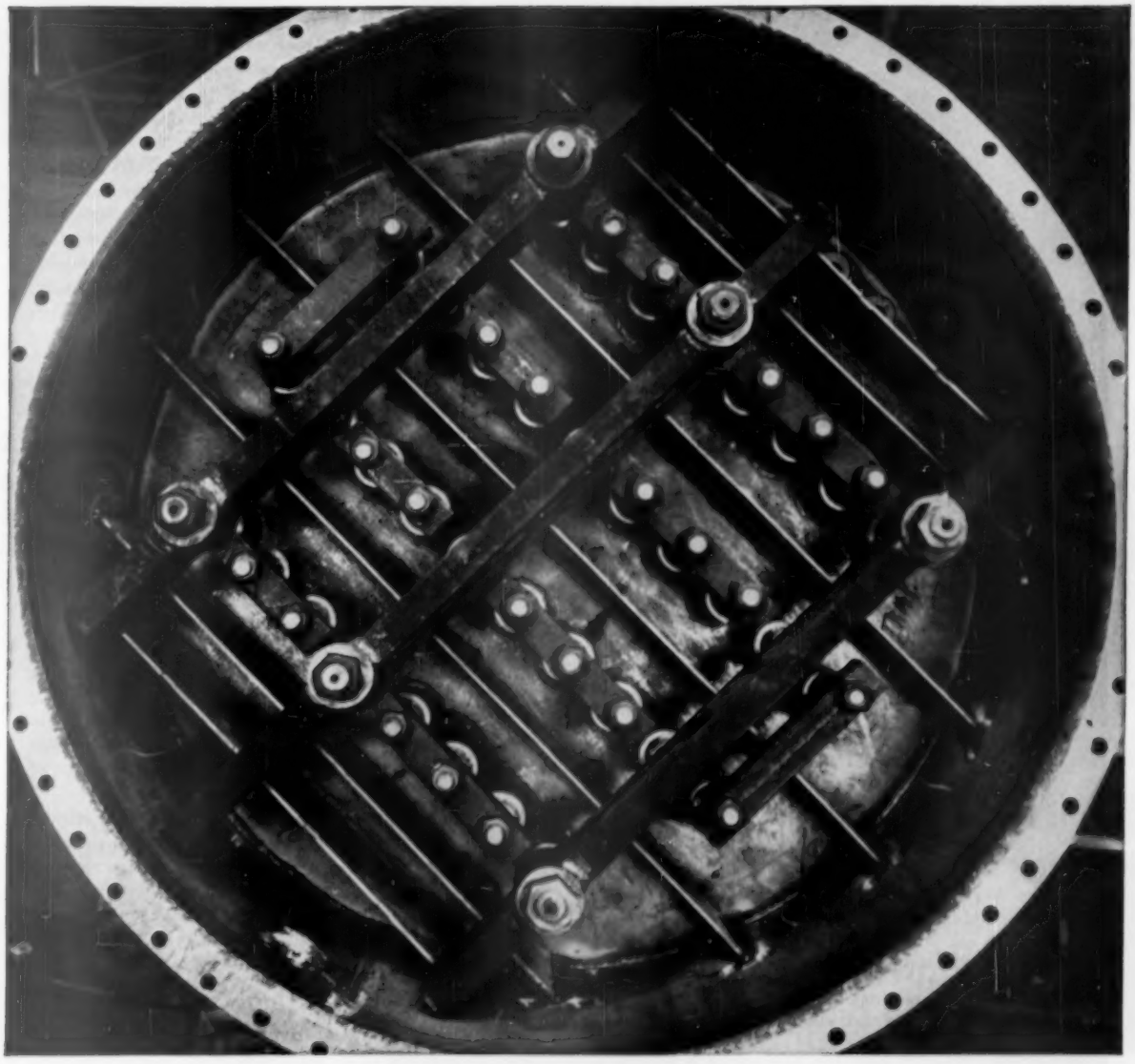
Plans have also been made to investigate pressure-shell reactors that have a cold moderator—the moderator region would be thermally insulated from the fuel elements and would have its own cooling circuit.

• In the pressure-tube reactor category, attention was divided between a heavy-water-cooled and a gas-cooled design. (Organic liquids, light water and liquid metals may be considered later on.) In these designs the D_2O moderator has a temperature and a pressure close to atmospheric conditions while pressure and temperature of the primary coolant are relatively high. For the water-cooled design the coolant pressure would be about 1,500 psi and the temperature 570° F; the figures for the gas-cooled reactor would be 150–300 psi and 750–850° F.

D_2O-Cooled-and-Moderated Reactor

Thermal power	460 Mw
Gross electric power	110,000 kw(e)
Natural uranium inventory	27 tons
D_2O inventory	140 tons
Primary system pressure	515 psia
Primary coolant flow	70,000 gpm
Primary pump power	1,700 hp
Coolant inlet temperature	397° F
Coolant outlet temperature	446° F
Steam conditions:	
pressure	160 psi
temperature	365° F

In general the pressure-tube concept, permits operation at a higher thermal efficiency than the pressure-shell concept because of its higher coolant temperature and requires a smaller D_2O inventory since a coolant other than D_2O can be used. The improvement



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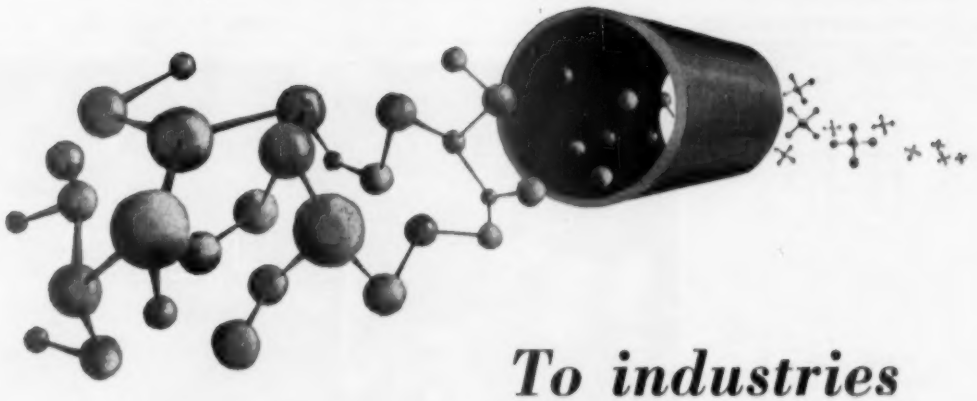
in gross thermal efficiency can amount to as much as 20%. The D_2O inventory for a gas-cooled pressure-tube reactor is reduced by as much as 40%. On the other side of the picture, however, the gas-cooled reactor was found to require larger fuel inventory, bigger steam generators and more pumping power. As a class the pressure-tube reactors have problems of (a) insulating the moderator, (b) making reliable pressure-tube joints and (c) allowing for differential thermal expansion between the pressure-tubes and the other parts of the reactor.

The gases looked at by the group as possible coolants include hydrogen, helium, and carbon dioxide. The fuel element design favored for the gas-cooled concepts consists of a large number of natural-U twisted ribbons close-packed within a housing tube. Each ribbon is clad with zirconium or possibly magnesium. A twist of 360° per ft of ribbon length effectively spaces the ribbons from each other and thus defines the channels for coolant flow. The concept could also be used in water-cooled systems by designing an assembly with fewer but thicker ribbons. The group feels, however, that the twisted ribbon design is best suited for gas-cooled applications.

Experimental program. A series of physics experiments to measure the nuclear buckling for various reactor lattices has been started. To date approximately 150 lattice arrangements have been surveyed, using U-metal fuel elements in the form of plates, tubes and rods. Measurements with oxide fuel are also planned. The lattices included mock-ups of both D_2O and gas-cooled designs.

The determinations of buckling as a function of fuel-element type and spacing provided the basis for estimates of the reactivity limit on burnup in the different lattices. The survey showed that the best burnup performance could be expected from the heavy-water-cooled reactor types. The optimum lattice of this kind was found to have a moderator:fuel ratio of 25:1 and a lattice spacing of 6.5–8 in. A reactor with this lattice in a 12-ft-dia reflected core should be able to achieve burnups of about 3,000 Mwd/ton with batch loading or 5,000 Mwd/ton with a multizone loading scheme.

The group also reported on progress in a fuel-irradiation program. Three natural U tubes survived a lengthy irradiation (at 350° F below design) without showing harmful effects.



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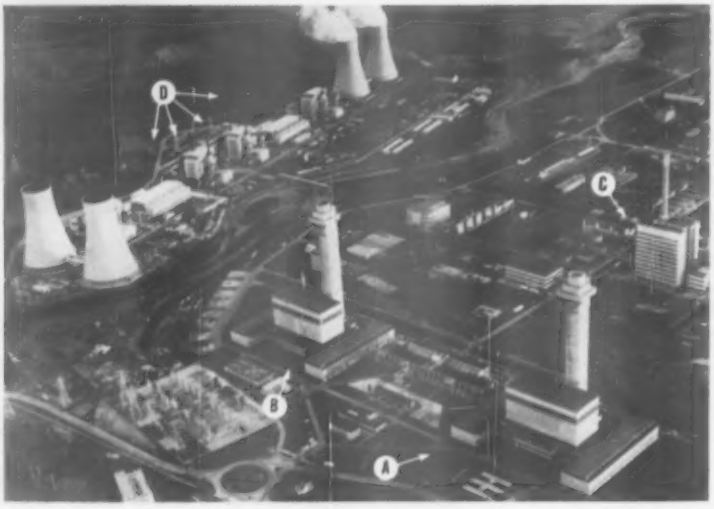

WINDSCALE PLANT is shown in relation to Calder Hall's four reactors (D). Afflicted Windscale reactor No. 1 (A), Windscale No. 2 (B) and plutonium extraction plant (C) make up U. K. plutonium plant. Large protuberances on Windscale reactor exhaust stacks are elaborate filters to trap radioactive material

Reactor Accident at Windscale*

FOR SEVEN YEARS Britain's Windscale plant has been matter-of-factly turning out plutonium for the British weapons program. The two Windscale reactors were Britain's first entries in the large-reactor field. Because Britain could get no assistance from the U. S., she had to produce her own weapons plutonium—and so built reactors of a type described as giving the kind of safety Britain needs. The successful experience with Windscale led Britain to model her first power reactors, at Calder Hall a stone's throw away, after Windscale—and this in turn led to a large measure of international prestige and a world-wide drive to export Calder-type reactors.

Early Thursday evening, October 10, Windscale's peaceful existence—and that of Britain's nuclear program—was suddenly and dramatically shattered. During a routine maintenance shutdown on Number 1 reactor, the crew discovered (inadvertently, it seems) that a number of fuel elements in two of the fuel channels were glowing red hot. Checks showed that the aluminum cladding had already failed and that rapid oxidation of the uranium metal was even then releasing radioactive combustion and fission products through the reactor's 400-ft stack to the surrounding countryside. With chilling clarity those present began to realize how desperate the situation was. The first impulse to quench the reaction by turning on the reactor's forced air cooling system was stopped short by the sobering thought that this action could only make matters worse. As experts frantically considered alternative courses of action, Prime Minister MacMillan was advised of an impending national disaster and the production area was evacuated. Meanwhile the discharge of fission products (mostly iodine) from the overheated reactor continued.

In a harrowing late-night session, scientists at the atomic energy center forced themselves to an uneasy decision—the only thing was to try flooding the core with water. Early the next morning the scheme was carried out with success. The crisis was over.

The total number of curies released during the incident, although insignificant compared with the activity from an atomic bomb, was still large enough to produce observable effects in animals on nearby farms. Twenty-four hours after the original discovery, milk from cows in the neighborhood contained six times the maximum permissible concentration of radioactive iodine, plus some longer-lived activities.

So far, except for minor radiation burns suffered by one of the salvage personnel, there have been no reports of human injury. The highest external radiation level reported in the area following the incident was an unimpressive factor-of-two above normal background. Subsequent heavy rains have helped to wash residual activity out to sea. The most important question is how much of the long-lived isotopes Sr and Cs escaped. AEA vigorously disclaims any significant release. Its latest report at press time estimates Sr^{90} level at $\frac{1}{5}$–$\frac{1}{10}$ lifetime tolerance.

What Went Wrong?

Although radioactive milk captured the headlines, the interesting question—especially for reactor people—is what, exactly, went wrong in the first place. Windscale is a reactor in the classic form—a graphite cube with horizontal fuel channels, cooled by air exhausted to the atmosphere. The core holds several hundred tons of U in Al-canned slugs. It has been shut

Continued on page 204

* This report is based on unofficial communiques from our London correspondent. The official AEA report, not available at press time, will be summarized in the next issue of NUCLEONICS.

GENERAL TRANSISTOR

MAXIMUM RATINGS AT 25°C — TYPICAL CHARACTERISTICS AT 25°C

General Transistor Type	Polarity	Transistor Dissipation (mW)	Collector to Base Voltage (Emitter Open) (Volts)	DC Collector Current (ma)	Peak Collector Current (ma)	Storage Temperature (°C)	AC Current Gain (Common Emitter) (β)	DC Current Gain (β) Conditions	DC Current Gain (β) Gain	Power Gain (DB)	Noise Figure (DB)	Collector Cutoff Current Conditions	Collector Cutoff Current (μa)	Alpha Cutoff Frequency (mc)	Collector Voltage (Volts)	Emitter Current (ma)	Applications
GT-14	PNP	125	25	100		85	28			36	16	VCB=10V	6		4.5	1	Audio, Gen. purpose
GT-20	PNP	125	25	100		85	42			40	16	VCB=10V	6		4.5	1	Audio, Gen. purpose
GT-34	PNP	125	25	100		85	15			32	16	VCB=10V	6		4.5	1	Audio, Gen. purpose
GT-74	PNP	125	25	100		85	75			42	<12	VCB=10V	6		4.5	1	Audio, Gen. purpose
GT-75	PNP	125	25	100		85	150			44	<12	VCB=10V	6		4.5	1	Audio, Gen. purpose
GT-81	PNP	125	25	100		85	75			42	16	VCB=10V	6		4.5	1	Audio, Gen. purpose
GT-81 HS*	PNP	150	25	200		85	120			44	16	VCB=10V	6		4.5	1	Audio, Gen. purpose
GT-82	PNP	125	25	100		85	150			46	16	VCB=10V	6		4.5	1	Audio, Gen. purpose
GT-109	PNP	125	25	100		85	120			44	16	VCB=10V	6		4.5	1	Audio, matched pair
GT-222	PNP	125	12	100		85	20			30	30	VCB=10V	6		4.5	1	Audio, Gen. purpose
GT-14 H	PNP	90	12	50		75	28			36	12	VCB=10V	6		4.5	1	Hearing Aid
GT-20 H	PNP	90	12	50		75	42			40	12	VCB=10V	6		4.5	1	Hearing Aid
GT-81 H	PNP	90	12	50		75	80			42	12	VCB=10V	6		4.5	1	Hearing Aid
GT-210 H	PNP	90	12	50		75	15-250			>34	>29	VCB=10V	<25		4.5	1	Hearing Aid
GT 759 R	PNP	90	12	100		75	25			24φ			6	2.5	4.5	1	R.F. & I.F.
GT-760 R	PNP	90	10	100		75	40			28φ			6	5	4.5	1	R.F. & I.F.
GT-761 R	PNP	90	10	100		75	70			32φ			6	11	4.5	1	R.F. & I.F.
GT-762 R	PNP	90	6	100		75	120			34φ			6	17	4.5	1	R.F. & I.F.
GT-83†	PNP	125	25	200	500	85	35-49			40	16		10	<7	4.5	1	Low Speed Computer
GT-87	PNP	125	25	200	500	85	38			36	16		10	5	4.5	1	Low Speed Computer
GT-88	PNP	125	25	200	500	85	80			42	16		10				Low Speed Computer
GT-122	PNP	125	25	200	500	85	80			42	16		10	1.5	4.5	1	Low Speed Computer
2N311†	PNP	100	15	‡		−55 to +85		IC=10ma VCE=5V	25-75			VCB=15V	<60				Low Speed Computer
GT-758†	PNP	100	>20	200	500	−55 to +85	15			20φ	16	VCB=15V	< 5	<5	4.5	1	Low Speed Computer
GT-123†	PNP	100	>20	200	500	−55 to +85	30-150					VCB=20V	< 6	> 5	4.5	1	High Speed Computer
GT-153†	PNP	100	>30	200	500	−55 to +85	> 20					VCB=20V	< 5				High Speed Computer
GT-269†	PNP	100	25	200	500	−55 to +85						VCB=12V	< 4	> 4	4.5	1	High Speed Computer
GT-759†	PNP	100	>20	200	500	−55 to +85	20			24φ	16	VCB=15V	< 5	.5 to 3	4.5	1	High Speed Computer
GT-760	PNP	100	15	50		−55 to +85	40			28φ	16		1	5	4.5	1	High Speed Computer
GT-761	PNP	100	15	50		−55 to +85	75			32φ	16		1	10	4.5	1	High Speed Computer
GT-762	PNP	100	6	50		−55 to +85	100			34φ	16		1	20	4.5	1	High Speed Computer
GT-763	PNP	100	6	50		−55 to +85	120			35φ	16		1	30	4.5	1	High Speed Computer
GT-764†	PNP	100	>20	200	500	−55 to +85	200				16	VCB=15V	< 5	> 25	4.5	1	High Speed Computer
2N43A	PNP	150	45	50		−55 to +85	32-65			>12	<20	VCB=45V	16	>4	5	1	Military-Type
2N44	PNP	150	45	50		−55 to +85	16-32			34-43	<33	VCB=45V	15	>4	5	1	Military-Type
2N315	PNP	100	20	200	500	−55 to +85		IC=100ma VCE=.2V	20			VCB=5V	1	5	5	1	Switching computer
2N316	PNP	100	20	200	500	−55 to +85		IC=200ma VCE=.2V	30			VCB=5V	1	12	5	1	Switching computer
2N317	PNP	100	20	200	500	−55 to +85		IC=400ma VCE=.2V	30			VCB=5V	1	20	5	1	Switching computer
2N356	NPN	100	>30	200	500	−55 to +85		IC=100ma VCE=.25V	30			VCB=5V	< 5	3	5	1	Switching computer
2N357	NPN	100	>30	200	500	−55 to +85		IC=200ma VCE=.25V	30			VCB=5V	< 5	6	5	1	Switching computer
2N358	NPN	100	>30	200	500	−55 to +85		IC=300ma VCE=.25V	30			VCB=5V	< 5	9	5	1	Switching computer
2N318/(GT-88)	PNP	50	12	20		85	100			42	20		10		4.5	1	Phototransistor
GT-34HV	PNP	150	50	‡		85	10			32	16		10		4.5	1	High Voltage
GT-34N†	PNP	125	100	200	500	85	18					VCB=100V	<450		4.5	1	Neon light
GT-34S†	PNP	125	40	200	500	−55 to +85	15			32	24	VCB=15V	15		4.5	1	Bi-directional
GT-35/(2n35)†	NPN	100	25	100	200	−40 to +75	40			40	16	VCB=12V	12		5	1	Audio, Gen. purpose
GT-229†	NPN	100	>10	200	500	−55 to +85	> 10				30	VCB=10V	<10		5	1	Experimental Amateur
GT-167†	NPN	100	25	200	500	85	> 25					VCB=15V	<10	> 5	5	1	High speed switching computer
2N312†	NPN	100	15	‡		−55 to +85		IC=10ma VCE=5V	25-75			VCB=15V	<60				High medium speed switching computer
GT-792†	NPN	100	20	100	200	−55 to +85		IC=5ma VCE=5V	37-160			VCB=5V	6	4.8	5	3	Switching computer
GT-903†	NPN	100	20	200	500	−55 to +85		IB=1ma VCE=.2V	35-70			VCB=20V	<25				High & med. speed switching computer
GT-904†	NPN	100	20	200	500	−40 to +75		IB=1ma VCE=.2V	>30			VCB=20V	<25	> 4	5	1	High speed switching computer
GT-905†	NPN	100	20	200	500	−55 to +85		IB=1ma VCE=.2V	20-40			VCB=20V	<25				High & med. speed switching computer
GT-947†	NPN	100	15	200	500	−55 to +85		IB=1ma VCE=.2V	>40			VCB=10V	<25				High & med. speed switching computer
GT-948†	NPN	100	20	200	500	−55 to +85		IB=1ma VCE=3.5V	>30			VCB=20V	<20	> 4	5	3	High & med. speed switching computer
GT-949†	NPN	100	30	200	500	−55 to +85		IB=1ma VCE=3.5V	>30			VCB=30V	<25	>.7	5	3	High & med. speed switching computer

*Supplied with Heat Sink ‡Limited only by Collector Dissipation φFrequency = 455KC †Preliminary Specifications — Subject to Revision at any Time by General Transistor Corp.
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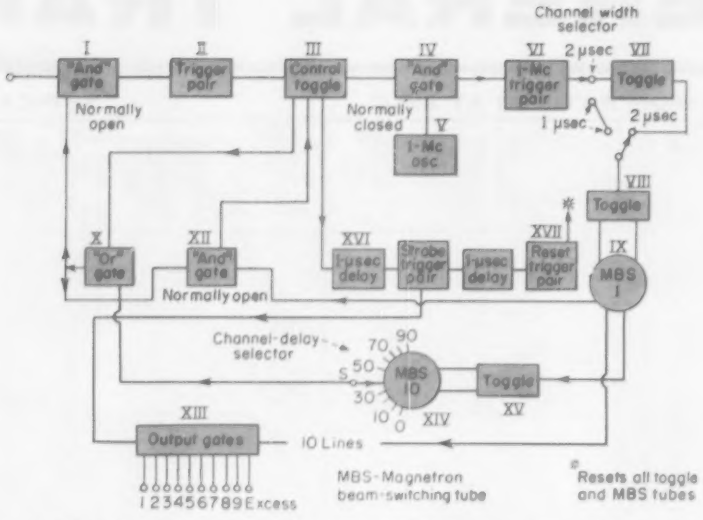

FIG. 1. Block diagram of time analyzer circuit which measures interval between detection of neutron pair. Operation is described on facing page

Measuring the Prompt Period of a Reactor

By G. S. BRUNSON, R. CURRAN, S. G. KAUFMANN, J. McMAHON and L. PAHIS
Argonne National Laboratory, Lemont, Illinois

From the safety viewpoint, an experimental measurement of the prompt period of a reactor is a useful thing to have. On the other hand a direct observation of the period while the system is prompt critical is out of the question for most reactors or critical assemblies. The determination of the prompt period must therefore follow indirect methods. The method used here, the Rossi alpha method,* arrives at the prompt period through statistical observations of the neutron population while the reactor is in a delayed critical or subcritical condition. In addition the method yields information about over-all reactor behavior and permits control-rod evaluation directly in dollars.

Both F. deHoffman (*1*) and J. Orndoff (*2*) have dealt with the statistics of reactor neutron populations and the information that can be obtained from studying them. Since Orndoff has already worked out the theory of the method in detail, we will give only a short summary and then go on to describe the experimental setup and the results of some recent applications.

Theory

If a burst of neutrons from some external source is injected into a reactor below prompt critical, the prompt-neutron population will die away according to

$$N(t) = N_0 e^{\frac{(K_p - 1)t}{r_0}} = N_0 e^{\alpha t} \quad (1)$$

where:

$N(t)$ = instantaneous neutron population at time t

* Named after Bruno Rossi who suggested the experiment.

How the Time Analyzer (Fig. 1) Works

A block diagram of the coincidence circuit is shown in Fig. 1. The first neutron detected causes a positive pulse to feed into "and" gate *I* which is normally open to pulses. The pulse passes on to a first trigger pair *II* where it is shaped and fed into a control toggle *III*. This is a flip-flop circuit that holds "and" gate *IV* normally closed thus preventing the 1-Mc pulses continually generated by oscillator *V* from reaching stage *VI*. The incoming pulse opens gate *IV* releasing the 1-Mc oscillator pulses into *VI* where they are amplified and fed into the *VII–IX* toggle and magnetron-beam-switching-tube combination. Each successive oscillator pulse causes MBS tube *IX* to advance its switch position one step through ten possible positions. Outputs from tube switch positions 1–9 go to individual channels of the output gates *XIII*.

The next pulse supplied to stage *I* passes through stages *I* and *II* in the same fashion as the first pulse did, but now swings the control toggle *III* to the *off* position where it biases "and" gate *IV* so that further oscillator pulses from *V* are barred from *VI* and later stages. The *VI–IX* combination will become quiescent again and remain on the switch position of tube *IX* that corresponds to the number of oscillator pulses that had time to pass from *V* to *IX* in the time interval between the first and second input pulses. Since the pulses from *V* are spaced 1 μsec apart, the position of *IX* at the time of the second pulse is a measure of the time interval between a pair of pulses entering stage *I*.

The circuit action outlined so far is adequate for intervals between pulses up to 9 μsec. If 10 or more μsec elapse, tube *IX*, having only 10 positions, will pass through a complete cycle, and the information fed into the output gate *XIII* will be ambiguous. Circuit elements *XIV*, *XV* and *X* enable measurements of intervals longer than 10 μsec. They act to delay the sensitive 9-μsec period for the number of 10-μsec intervals preset by the experimenter on switch *S*.

If intervals of 9 μsec or less are to be measured, *S* is set on zero. However, with *S* on a nonzero position, the first pulse into *I* will open *IV* to oscillator pulses as described earlier but will also, via stage *III*, flip "or" gate *X* so that it biases "and" gate *I* to insensitivity for subsequent pulses. The input channel then lies dormant while stages *VIII* and *IX* count microseconds after the initial pulse. After each 10 μsec *IX* supplies a pulse into the delay combination *XIV–XV*, a scale-of-ten unit similar to *VII–IX*. When *XIV* has seen the right number of input pulses from *IX* it reaches the position where delay switch makes contact. A pulse is then fed into "or" gate *XS* flipping it to a position where it makes stage *I* receptive to pulses again. An incoming pulse will now be effective in shutting off *IV* to oscillator pulses and will stop *IX* in a position indicating the number of microseconds between the reactivation of stage *I* and the arrival of the second pulse. The number of microseconds recorded in *IX* added to the delay setting of *S* gives the total separation between the two pulses.

In addition to causing switch *IX* to stop where it is, the second pulse causes the circuit to record a count on a register connected through the output channel at *XIII* to this switch position. The "strobe trigger pair" behind *XVI* is driven by *III* and sends a pulse to *XIII* each time *III* is reset by a second pulse. This provides a strobe-coincidence pulse in *XIII* causing the final position of *IX* to be registered in one of nine output channels.

At the same time a pulse goes from the strobe to *XVII* which, in turn, resets the entire circuit so that it will treat the next incoming pulse as the first of a pulse pair. This action, then, resets the circuit to its original condition as soon as a pulse pair has been seen and registered by the circuit. Thus, of three pulses arriving at, say, 0, 20, and 26 μsec, only the 20-μsec pulse will complete a pair; the pulse at 26 μsec will appear to the circuit as the first of a new pair.

If no mate is found to a first pulse to complete the pulse pair, switch *IX* continues to follow oscillator pulses from *V* until position 10 is reached. Then it feeds an output pulse into *XII* and from there via *III* to the "strobe trigger pair." A count is registered in a special channel of the output gate marked "excess." It will also reset the entire circuit to its original condition so that it is again receptive to a pulse which may serve as the first part of a new pulse pair.

Short delays are introduced at the places indicated to bring events into coincidence by matching the delays in parallel stages. The channel width selector *VII* gives the experimenter the option of 2-μsec channels in place of 1-μsec channels.

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N_0 = neutron population at time $t = 0$

K_p = prompt reactivity, i.e., ratio of the number of prompt neutrons in one generation to the number in the preceding generation ($K_p - 1$ is negative for all reactivities below prompt critical)

τ_0 = average prompt-neutron lifetime in the assembly

$\alpha = \dfrac{K_p - 1}{\tau_0}$ and is called the "Rossi alpha"

The Rossi method hinges on the fact that the time behavior of the burst corresponds to the average behavior of a single neutron chain since the burst is simply the sum of a large number of neutron chains simultaneously initiated. A reactor at very low power contains only a few prompt neutron chains at any given instant; consequently a sensitive neutron counter can frequently detect two or more neutrons from the same chain. After it has detected a neutron from a given chain at t_0 there is a certain probability that the counter will detect in a succeeding interval of time Δt either a random neutron from some other chain or a related neutron from the same chain. The probability of detecting a random neutron is simply $c\Delta t$ where c is the counting rate. Since, on the average, the neutron population of the chain decreases as $e^{\alpha t}$, the probability of detecting a related neutron decreases as $e^{\alpha t}$. Thus the over-all probability of finding a neutron in Δt at t having previously detected one at $t = 0$ is

$$P(t) = c\Delta t + Ke^{\alpha t}\Delta t \qquad (2)$$

Orndoff gives K as

$$\left[\overline{\nu(\nu-1)}_{\text{avg}} + \frac{2\nu(1-K_p)}{K_p}\,\delta\right] \times \frac{EK_p^2}{2\nu_{\text{avg}}^2(1-K_p)\tau_0}$$

where

ν_{avg} = average number of prompt neutrons emitted in fission

E = counter efficiency in counts per fission

The second term in the big brackets corrects for bias caused by the act of detecting the first neutron and is at most a few percent; δ is the effective number of neutrons resulting from the detection process.

If $P(t)$ is known as a function of t, then α can be found from Eq. 2. In the experiment $P(t)$ is measured by a time analyzer for nine successive time

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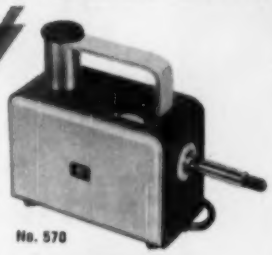

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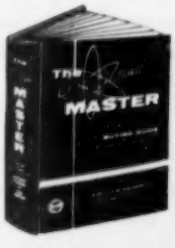

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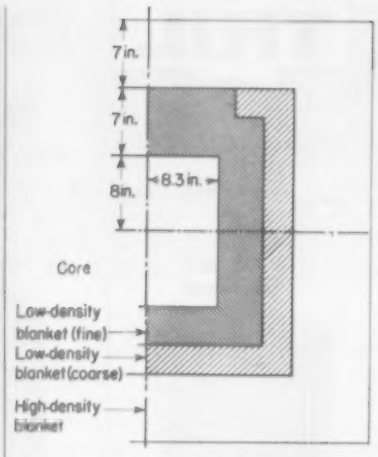

FIG. 2. Cross section view of fast critical assembly on which prompt period measurements were made. Assembly has cylindrical symmetry around vertical center line. The percent composition by volume is:

Material	Core	Low-dens. blanket	High-dens. blanket
U^{235}	14		
U^{238}	16		
Depleted U		40	83
Al	31	25	2
Stainless steel	12	7	7

channels each with width Δt. Subtracting $c\ \Delta t$ from $P(t)$ leaves $Ke^{\alpha t}\ \Delta t$, which, when plotted against t on semilogarithmic paper, yields a straight line having a slope equal to α.

Circuitry

The circuitry of the time analyzer is described in detail in the box adjoining Fig. 1. The first neutron pulse causes the circuit to be sensitive to a second neutron during a 9-μsec time interval that starts $10n$ μsec after the initial pulse (n is an integer that is preset by the experimenter and can take on the values 0, 1, 2, 3 . . .). If a second neutron appears during the sensitive interval, the circuit determines into which one of the nine 1-μsec channels the time of arrival falls and records a count on the external register corresponding to this channel. If no second neutron is detected by the end of the 9-μsec sensitive period, the circuit registers a count on the "excess" counter. In either situation at the instant of the count the circuit is reset so that it treats the next neutron pulse received as the first of another possible pair.

The circuit introduces a distortion due to the fact that it resets as soon as a pulse pair has been registered. $P(t_1)$, the probability of detecting a neutron

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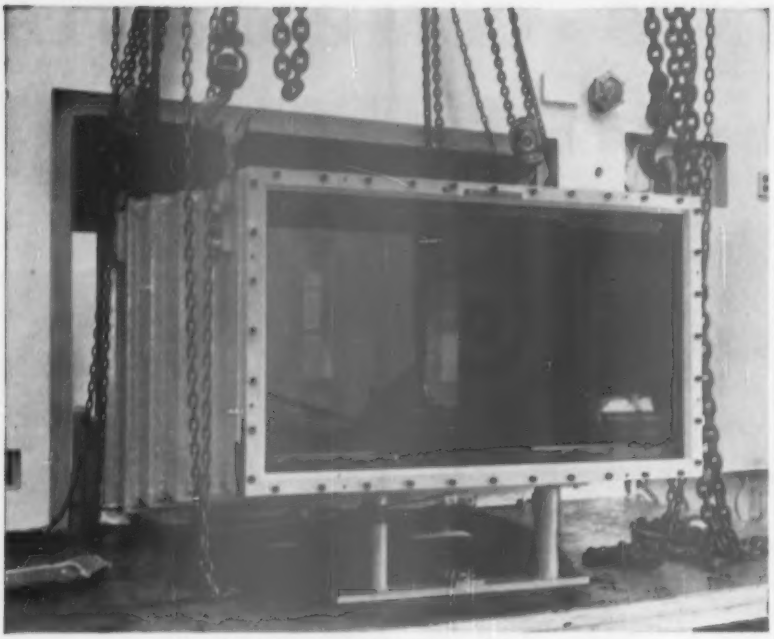

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in Δt at time t_1, can be written

$$P(t_1) = \frac{\text{successes}}{\text{trials}} = \frac{\text{number of neutrons counted in } \Delta t \text{ at } t_1}{\text{number of times } \Delta t \text{ examined at } t_1}$$

From the foregoing description of the equipment it will be seen that an examination of channel 9 results in either a count in that channel or, in the event of no detection, an excess count. Thus channel 9 will have been inspected (c_9 + excess) times (c_9 being the counts registered in channel 9) and $P(9) = c_9/(c_9 + \text{excess})$. Likewise an inspection of channel 8 will result either in a count in channel 8, in channel 9, or in excess; therefore channel 8 has been inspected ($c_8 + c_9 +$ excess) times and $P(8) = c_8/(c_8 + c_9 + \text{excess})$. By extension

$$P(j) = c_j \Big/ \Big(\sum_{i=j}^{9} c_i + \text{excess}\Big)$$

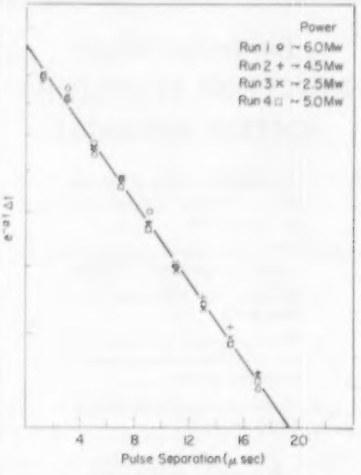

FIG. 3. Measurements of prompt period for assembly in Fig. 2. Relative probability of detecting two neutrons from same chain is plotted against time interval separating neutron pair. Slope of straight line gives prompt period

It should be noted that this method of correction gives straightforward probabilities and does not require dead-time corrections either for circuit reset time or for intentionally introduced delay time. Correction factors for nonuniformity of channel width were obtained empirically by measuring $P(t)$ with a random source.

For a random source Eq. 2 reduces to

$$P(i) = c\Delta t = f_i P(i)_{\text{measured}}$$

and the correction factor for width of channel i is then $f_i = c\Delta t/P(i)_{\text{measured}}$.

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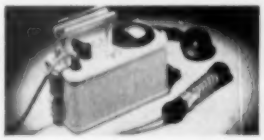
☐ 

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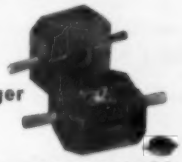
☐ 

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TABLE 1—Results for Typical Experimental Run

Channel	*Pairs counted*	Σc_j + *excess*	P(t)	*Corrected* P(t)	P(t) − cΔt
9	1,907	1,029,737	0.001852	0.001851	0.001250
8	2,128	1,031,865	0.002062	0.002065	0.001464
7	2,328	1,034,193	0.002251	0.002261	0.001660
6	2,619	1,036,812	0.002526	0.002570	0.001969
5	3,022	1,039,834	0.002906	0.002987	0.002386
4	3,463	1,043,297	0.003319	0.003470	0.002869
3	3,940	1,047,246	0.003771	0.003907	0.003306
2	4,476	1,051,722	0.004256	0.004708	0.004107
1	4,351	1,056,073	0.004120	0.005105	0.004504

Auxiliary data: Monitor count = 1,079,647; excess count = 1,027,830; dead time = 5×10^{-6} sec; dead-time correction = 0.45 cps; corrected counting rate = 300.35 cps; probability of random count, $c\Delta t = 300.35 \times 2 \times 10^{-6} = 0.000601$ (for 2-μsec channel width).

by counting activated hafnium with a photomultiplier and crystal. The resulting distribution of $P(t)$ defined a half-life of ~18 μsec for the metastable state of hafnium (*3*).

Results

Measurements were made on a number of fast critical assemblies in ZPR-III (*4*). A typical example is the dilute fast-critical assembly shown in Fig. 2. A standard Westinghouse fission counter containing ~1.5 gm of enriched uranium was placed approximately at the center of the reactor and the pulses brought to the time analyzer through a conventional preamplifier, amplifier and pulse height selector. The results of a typical run are given in Table 1. The monitor is a scaler that counts total pulse input to the time analyzer. Fig. 3 is a plot of this run and three others.

For a critical assembly exactly at delayed critical $K_p - 1 = -\beta$, where β is the effective fraction of delayed neutrons and

$$\alpha \equiv (K_p - 1)/\tau_0 = -\beta/\tau_0$$

A value for α of -8.47×10^4 sec^{-1} is obtained for the assembly in Fig. 2 from the plot in Fig. 3; β is estimated as 0.0080 for this assembly using Keepin's delayed-neutron data (*5*) and assuming no difference in effectiveness between prompt and delayed neutrons or between the various delayed-neutron groups. Therefore

$$\tau_0 = \frac{-\beta}{\alpha} = \frac{-8 \times 10^{-3}}{-8.47 \times 10^4} = 9.44 \times 10^{-8} \text{ sec}$$

TABLE 2—Summary of Experiments to Date

Core description †	$U^{235}:U^{238}$	% *Volume of U*	*Critical mass(kg)*	*Est. β*	*Just critical α* (10^4/sec)	*Neutron lifetime* (10^{-8} sec)
Hollow cylinder 16 in. long × 19 in. o.d., 6¾ in. i.d.	1:1	30	180	0.0080	− 9.45	8.5
Cylinder* 16 in. long × 16⅜ in. dia. (Fig. 3)	1:1	30	160	0.0080	− 8.47	9.4
8-in. cube (EBR-I)	0.06:1	50	46	0.0070	−17.4	4.0
Cylinder 16 in. long × 16 in. dia.	3:1	50	151	0.0090	− 9.0	10.0
Sphere 18 in. dia.	1:1	30	131	0.0080	− 9.85	8.1

* The blanket next to core had only ~42 % by volume of U. All other blankets were "full density" i.e. ~84 % U.

† All cores had blankets with essentially "infinite" thickness.

With a neutron source inserted in the assembly a number of runs were made at different levels of subcriticality. Assuming no change in τ_0 for small changes in reactivity, the relationship between α and reactivity should be linear and this is borne out in Fig. 4.

Since $K_p = 1$ at prompt critical, $\alpha = 0$ for prompt critical. Hence in Fig. 4 the distance of the 0 intercept from delayed critical determines the value of one dollar in terms of the units in which the control rods are calibrated.

Similar measurements have been made in the center of an assembly mocking up EBR-I. One run was made with the Westinghouse fission counter previously used and the other

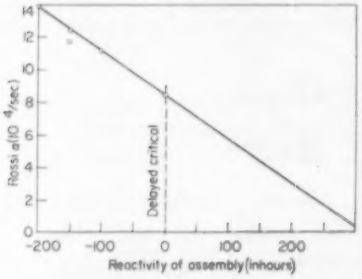

FIG. 4. Calibration of control rod in dollars. Measurements of inverse period at delayed critical and subcritical conditions gives straight line when plotted against control-rod reactivity. Point at which extrapolated line crosses horizontal axis corresponds to prompt critical

with a cluster of four 1-in. $B^{10}F_3$ proportional counters; the detectors were operated at the approximate center of the assembly. The two methods agreed and gave a value for α of 1.74×10^5 sec^{-1}. Since β for this assembly is estimated as 0.0070

$$\tau_0 = \frac{-\beta}{\alpha} = \frac{7 \times 10^{-3}}{1.74 \times 10^5} = 4.0 \times 10^{-8} \text{ sec}$$

Table 2 summarizes the results for all of the assemblies on which measurements have been made to date.

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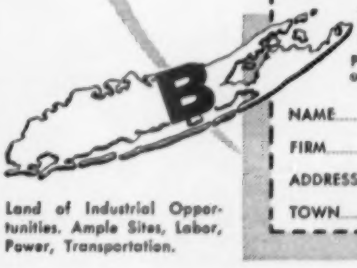

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A Review of Filtration Methods and a . . .

Throw-Away Filter Unit for Radioactive Liquids

By C. M. NICHOLLS and C. D. BOADLE
Atomic Energy Research Establishment, Harwell, Berkshire, England

IN PROCESSING NUCLEAR FUELS a need arises for separation of solids from liquids in very radioactive systems—a difficult problem of remote handling. Engineers meet the problem with centrifugation and filtration. We propose to review the several filtration methods that are in use and to describe in detail

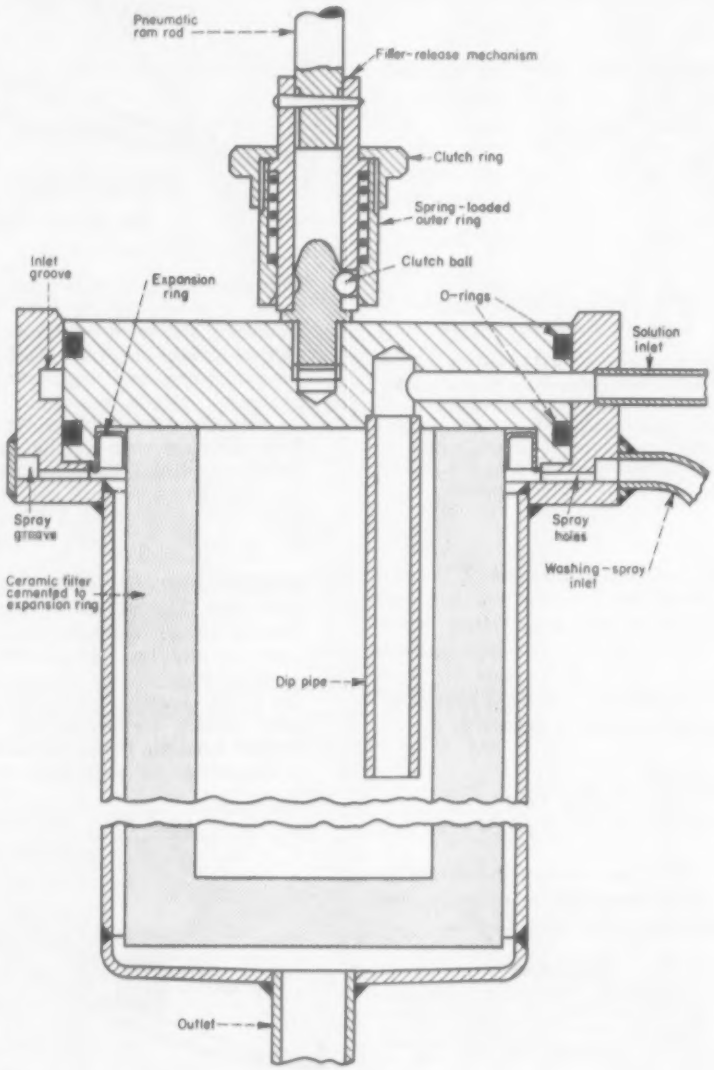

FIG. 1. Sintered-stainless-steel or ceramic filters are permanently attached to stainless-steel filter head. Pneumatic ram rod has 3-ball clutch that grasps projection on filter head. Cams engage clutch ring to actuate clutch. Suction at outlet initiates filtration

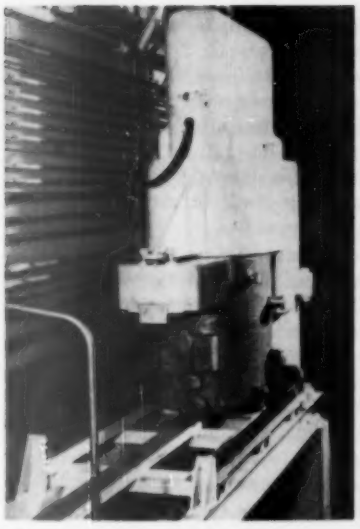

FIG. 2. Operating filter unit with transport flask in place to receive throw-away filter. Sliding cover is visible in foreground

a filter unit designed at A. E. R. E. It offers completely remote handling of an expendable filter.

Separation Problem

In general three fuel-processing situations require liquid-solid separation:

- Precipitations are sometimes carried out for chemical separations. The early Hanford processes based on bismuth-phosphate precipitations are examples, as are the head-end precipitations that have been proposed as precursors to solvent-extraction processes.
- Dissolution or leaching operations can introduce relatively large quantities of insoluble materials. Processing of fuels in which fissile and fertile materials are dispersed in solid moderators like graphite and beryllia are examples of this.
- Small amounts of solids sometimes occur in solutions that should preferably be solid, free. For example, there are usually small quantities of finely divided solids in most solvent-extraction processes that accumulate in the equipment. Also, in aqueous homogeneous reactors substantial improvement in neutron economy will result if small quantities of insoluble lanthanons (rare earths) can be removed from the fuel solutions.

Preseparation measures. Before considering the solid-liquid separation itself, attention is usually directed to treatments aimed to render the solid in a form most suitable for separation. In precipitation reactions, the *p*H of the solution, order and rate of addition

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of chemicals, aging, and temperature can affect the nature and size of the solid formed.

The homogeneous precipitation technique (*1*, *2*) and the use of ion-permeable membranes (*3*, *4*) are reported in some cases to result in precipitates that are easy to filter. A novel and elegant method for precipitating and recovering cations from solution without the need for filtration has been reported (*4*, *5*). The solution is passed through an anion-exchanger bed saturated with the precipitating anion (OH^-, CO_3^{--}, S^{--}, CrO_4^{--}, etc). The precipitate forms around the exchanger beads as an adhering film, a clear effluent being obtained from the column. The precipitate can be readily redissolved.

Emulsion formation and other troubles may be caused by the silicon compounds in feed solutions of some solvent-extraction separations. Evaporation of the solution to remove excess nitric acid leads to stable forms of silica, which, it is claimed, overcome the harmful effects and render the solids more easily filterable (*6*).

Separation methods. Centrifuges have been especially developed or modified for remote operation in nuclear plants. In liquid-fuel nuclear reactors centrifugal separation by hydraulic cyclones has been considered recently for partial separation of solids from liquids. However, in many instances separation is performed by filtration.

Filtration

Up to now four filtration methods have been proposed or used on radioactive solutions. They can be described as follows:

1. Porous-metal, plastic or ceramic filters. These filters, particularly those of sintered stainless steel, have been used in several plants for clarifying feed solutions of solvent-extraction separation processes (*7*, *8*). Star-shaped, stainless-steel filter elements with porosity of 5 microns have been used in the separation plant at Arco, Idaho, and equipment has been described for replacing these filters (*8*, *9*). These porous-plate filters would be expected to block or "blind" rapidly when handling solutions containing siliceous sludges from uranium or thorium dissolved in nitric acid. Such a blocked filter can sometimes be cleared by backwashing with nitric acid, caustic soda or sodium fluoride. The use of a filter-aid to help to prevent this blinding would usually be considered if such a material did not interfere with the separation process. The scavenging of traces of solids from solutions by manganese-dioxide precipitations has been mentioned (*7*).

The Stang filter (*9*, *10*) is a variation of this type. In this case the precipitation is carried out in a vessel with a sintered bottom of metal, plastic, ceramic or glass, the solution being held in the vessel by gas pressure applied below the sinter. By increasing the gas pressure, gas can be made to bubble through the solution to provide agitation. When the gas is turned off, the liquid flows through the sinter, filtering off the precipitate. The precipi-

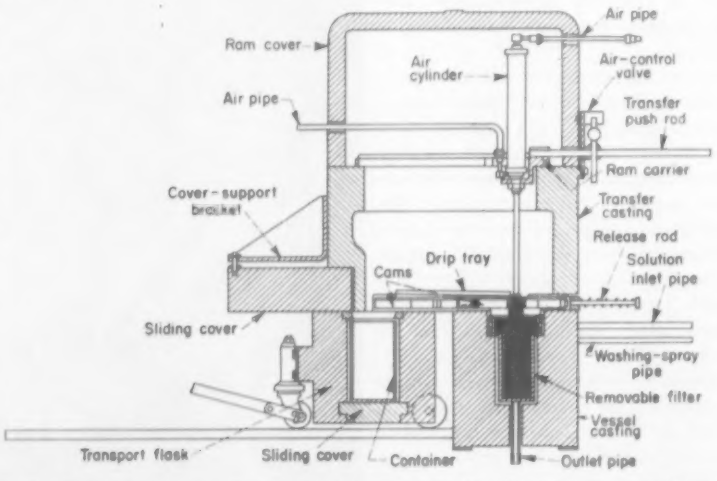

FIG. 3. Pneumatic ram permits transfer of expendable filter (black) from use position to transport flask by remote operation. Flask is shown slightly displaced from position in which it receives filter

tate is then dissolved in a second solution in the vessel.

2. Graded-bed, washable filters. This type of filter has been used in the separation plant at Windscale (*11*). A sand filter packed with graded graphite was introduced to prevent solids in the dissolver liquid from causing blockage in the ring packing of the extraction columns. Lutes and air boxes* were substituted for valves to make remote control simple. Operation has never been entirely satisfactory, and it has been practice to bypass this filter and remove blockages from the extraction plant by washing back.

3. Magnetic filters. This filter incorporates a bed of magnetic material held in position by a magnetic field (*12*). Removing the field by turning off the current to the electromagnets makes possible removal of the filter bed by washing. A new bed can be built up by turning on the current and feeding in a slurry of the magnetic material used for the filter bed.

4. Self-clearing strainers. If modified suitably, commercially available strainers find some application where it is desired to remove small quantities of reasonably large particles (>0.005 in.) from liquids. Solids held in the strainers can be removed by rotation of a central spindle, and the sludges can be discharged from the strainer casing. These operations should be reasonably easy to carry out by remote control.

Why Throw-Away Filters?

The scale of operation can vastly affect the design of feasible filtration equipment. For example, some plants separate individual fission products from concentrated waste streams or handle pure fissile materials. The volumes to be handled are very small compared with the volumes of aqueous solutions at the feed end of separation processes treating natural or slightly enriched uranium fuels. The small volume of solution and precipitate to be handled can make throw-away filters economically feasible. In larger sizes discarded filters can lead to prohibitive storage costs.

For nuclear plants a hypercritical approach is required to all servicing

* "Lute" is British jargon for a water seal, and an air box is a small vessel in which air pressure can be varied. A typical instance of lute-and-air-box technique is the method used to control the interface level in a radioactive solvent-extraction column, the lute and air box replacing the control valve in conventional operation.

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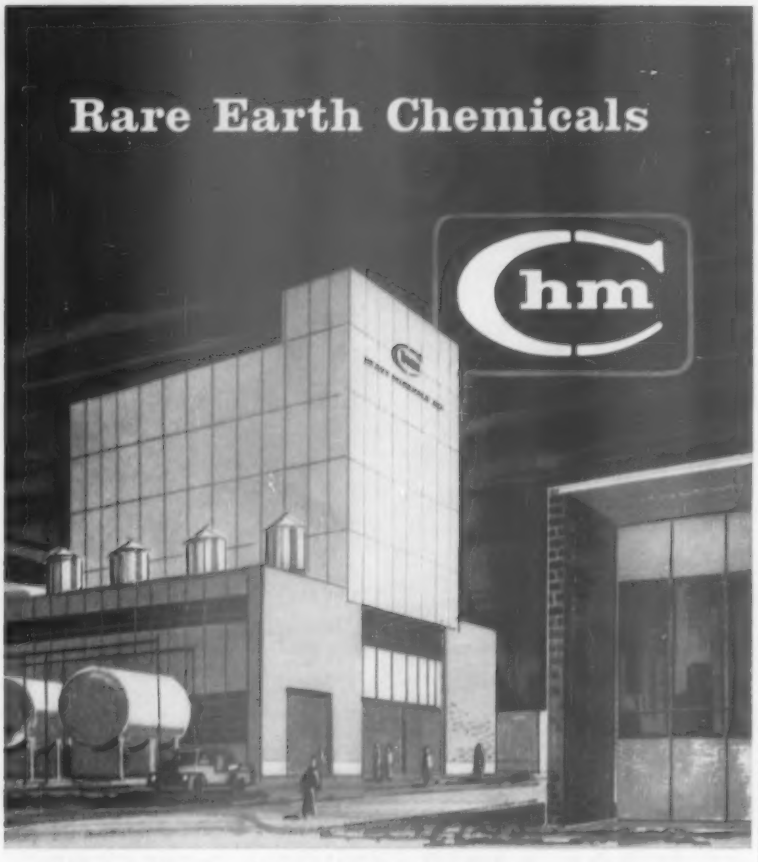

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problems, and complete mechanical reliability is a necessity. The development of these throw-away filters is a simpler problem than permanent filters that have to be cleaned periodically of precipitate or systems in which filter beds must be reestablished. Furthermore it is easier to develop filters for removing small quantities of unwanted products than for precipitates that must be removed for further processing. The early Hanford processes were based on precipitation, and it is known that considerable engineering effort went into development of methods of remote servicing and replacement of equipment.

Development of solvent-extraction processes led to the much easier liquid-liquid rather than liquid-solid separations, and in these plants it pays to eliminate remote handling, as distinct from remote control, as far as possible. The key operation is often the making and breaking of joints in metal equipment in a manner that will be contamination-free. Harty has mentioned devices used at Hanford for enabling remotely controlled connections to be made in process piping (*13*). Methods for use in laboratory-scale equipment have also been described (*9*). We have used a completely different method.

Our Filter Unit

Figure 1 is a detailed section of the filter itself, and the general arrangement of the filter unit and its transport flask is shown in Figs. 2 and 3. Figure 4 shows the sealing method that is now in use in place of the seals of Fig. 1.

The filter itself can be either a ceramic or a sintered-stainless-steel box type permanently attached to a stainless-steel head. A pneumatic ram holds it in place during use, compressing the O-ring seals. Removal is accomplished by using the ram to lift the filter from its in-use position, carry it horizontally to a position over the container in the flask, and deposit it there. Then the flask can be carried to a disposal pit where the filter is dropped by sliding away the bottom cover.

Filter vessel. It was decided that all filtration would be carried out under vacuum so that any leakage around the filter element would result in nothing worse than inleakage of air. The filter vessel is so made that all parts in contact with solutions are of 18/8 stabilized stainless steel. It has an outlet at the base and two inlets near the top. The upper one is the solution inlet, and it connects with a groove machined in the

vessel. The lower is a washing-spray pipe. It leads to a groove in the outer part of the vessel wall. A row of small holes is arranged so that clean water injected through the spray pipe washes down the outer surface of the filter and removes some surface radioactivity before removal of the filter.

Handling mechanism. The open-topped filter vessel is in a heavy shield and covered by the transfer casting and ram cover. These provide adequate shielding for the highest levels of gamma activity in the solutions handled by the plant. All shielding is of cast iron. The interior is treated with acid-resistant paint.

The whole unit is mounted on a fabricated steel frame, which incorporates a set of three rails. On these the transport flask is wheeled beneath the overhanging end of the transfer casting. The transport flask and filter vessel then form corresponding containers between which the filter can be exchanged. The operation is performed by means of the pneumatically operated cylinder that can be moved over either the flask or the filter vessel.

The end of the ram rod carries a three-ball clutch that engages or releases the filter unit when the spring-loaded outer ring is lifted. This is accomplished by pushing the filter-release rod. A cam engages the clutch ring, which opens the clutch. There are two of these cams, one at each of the two cylinder positions so that the filter can be engaged or dropped over either the transport flask or the filter vessel.

A mechanical interlock between the transfer push rod and the air-control valve for the cylinder makes it impossible to operate the cylinder except when it is in either of the two proper positions. It is impossible to move the cylinder carriage except when the air valve is in the *up* position.

Operation. To begin operations, the air cylinder is moved opposite the flask station without the flask in position and a new filter is attached by hand to the clutch of the extended ram. The ram is retracted; the cylinder moves over the filter vessel; and the filter is driven into place with the cylinder. Filtration is then carried out by applying a vacuum to the outlet line.

Transport flask. The three-wheeled cast-iron transport flask, one wheel of which is steerable, has a detachable handle for towing. The flask has a sliding cover, which moves on ball bearings, and the base has a similar

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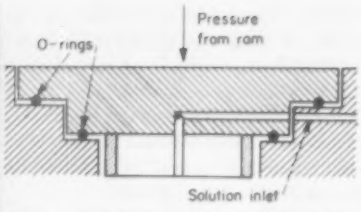

FIG. 4. End O-ring seals eliminate sticking that was formerly troublesome with the seal of Fig. 1

smaller sliding door between the wheels. A stainless-steel container, open at the top, fits loosely into the cavity, and a detachable ring fits into a recess in the top of the body to cover the gap between container and cavity and direct any drips from the filter into the container.

In operation, the transport flask is lifted from the floor to the filter platform by means of a monorail hoist and lowered onto the three rails. It is then rolled by hand beneath the overhang of the transfer casting of the filter unit. A pin projecting from the sliding lid of the flask engages a slot in the cover-support bracket on the transfer casting, and as the flask rolls under the casting, the cover remains supported on this bracket and slides off the top of the flask. The uncovered flask rolls into position under the cavity in the transfer casting. In reverse, the cover is replaced on the flask automatically, the pin on the cover disengaging from the bracket only when the cover is completely in place.

As the top of the uncovered flask fits closely beneath the transfer casting, practically complete radiation shielding is afforded at all times when an active filter is being discharged. The only gamma rays to which operators can be exposed are the very narrow beam emerging momentarily through the gap between flask and transfer casting while the filter is lowered into the flask. This exposure is negligible.

To discharge the active spent filter, the flask is transported over a vertical cavity intended as the final disposal place, and the bottom slide is withdrawn to allow the filter and the loose container to fall vertically. The slide is then closed, and the container is replaced with a new one. Then the flask is ready for service once more.

Seals. When the design was undertaken, there was not enough time for extensive development of seals for the filter unit, and in consequence the best type of existing seal had to be adopted.

This was the O-ring seal. All elastomers that were tested swelled appreciably in the strongly acid solutions used. The rings stuck to the walls of the filter body so that removal became problematical at best. As the O-rings shrank again on drying, it was not possible to precondition them before use. Three courses were then open: (a) Select ring materials that gave a minimum of swelling and modify the initial compression of the rings so that subsequent swelling would not be serious. The material used would also have to be resistant to the highly acidic solutions. (b) Use air-inflated seals. (c) Modify the filter heads, so that the seals were made as end seals, and the joint made by holding the filter head in place with air pressure in the cylinder.

After considerable experimentation it was decided to accept this last scheme and use a seal made by direct loading from the air cylinder (Fig. 4). This has been entirely successful and has eliminated all the previous sticking problems.

Experience

This design of filter unit has been a reliable, efficient and compact method of providing a disposable filter of the sintered-stainless-steel or ceramic types. The design can be scaled up or down considerably, and appreciable increases in filtering capacity are possible with little or no increase in over-all size. With modifications the unit can be used in systems where the filtered solids are to be recovered. With a seal that will be equally serviceable under both pressure and vacuum, the range of usefulness of this type of filter unit can be extended for application to other replaceable process equipment.

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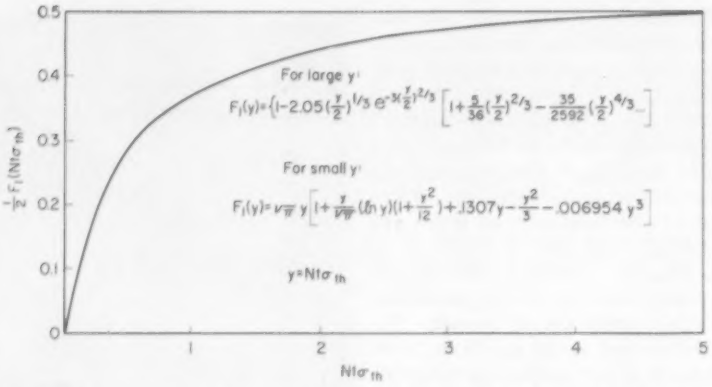

FIG. 1. Thermal neutron absorption term, $\frac{1}{2}F_1$, is given for $1/v$ absorber and Maxwellian flux distribution in slab geometry. t is slab thickness, N nuclear density and σ_{th} thermal-absorption cross section

Effectiveness of Control-Rod Materials

By H. P. ISKENDERIAN
Argonne National Laboratory, Lemont, Illinois

Neutron absorption capacity is an important factor in selecting a control-rod material. Although there are several absorbing materials that are black to thermal neutrons for small thicknesses, they are not equally good absorbers of epithermal neutron flux. The reactor designer, therefore, must have some means of evaluating the relative nuclear effectiveness of various absorbing materials so that he can balance this factor against other practical considerations such as availability, cost, metallurgical feasibility and radiation resistance.

This paper offers an analytical definition of nuclear effectiveness that can be used for this purpose. The for-

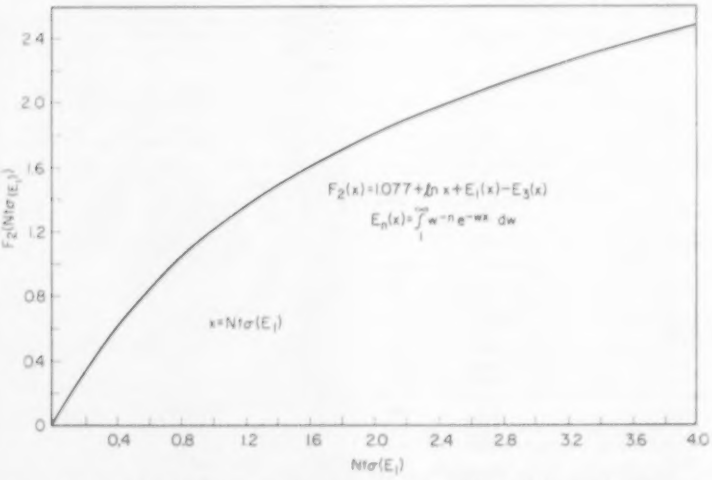

FIG. 2. Epithermal $1/v$ absorption term, F_2, is given for $1/v$ absorber in slab geometry with $1/E$ epithermal flux. $\sigma(E_1)$ is absorption cross section at energy E_1 where $1/E$ flux joins Maxwellian distribution

mulas derived allow quantitative estimates of the relative effectiveness of different materials in a thermal reactor as a function of thickness and neutron energy spectrum. The calculated effectivenesses of several materials show good agreement with experimental measurements for the same materials in a thermal reactor. Of the materials for which cross section data is available, europium appears to be the best absorber.

Control Rod Effectiveness

Given an infinite slab of thickness t with an isotropic neutron flux $\phi(E)$ at the surface, the number of neutrons absorbed in the slab per unit area of surface is

$$A = \frac{N}{2}\int_0^\infty \int_0^1 \int_0^t \phi(E)\sigma(E)e^{-Nz\epsilon/\mu}\, dz\, d\mu\, dE \quad (1)$$

where N is the density of nuclei, E is the neutron energy, z is distance into slab and μ is the cosine of the angle of incidence.

Equation 1 can be looked upon as a measure of the effectiveness of different control-rod materials in slab geometry. Epithermal absorption is taken into account by adding a $1/E$ epithermal tail to the usual Maxwellian thermal flux distribution. Thus the energy distribution of the neutron flux at the slab surface becomes

$$\phi(E) = \frac{E}{(kT)^2}e^{-E/kT} \text{ for } E < E_1$$
$$= C/E \qquad \text{for } E > E_1$$

where C is a constant and E_1 is the neutron energy where the two flux terms join together. The energy dependence of the cross section is assumed to be $1/v$, except at resonances where it is represented by the Breit-Wigner form. Accordingly, for a material with a single resonance the cross section is taken as

$$\sigma(E) = \sigma_{th}(0.025/E)^{1/2} + \sigma_0/(1 + w^2)$$

where $w = 2(E - E_0)/\Gamma$ and σ_{th} is the cross section at a neutron velocity of 2,200 m/sec.

With these functions inserted for the flux and cross section, Eq. 1 can be integrated* to give

$$A = \tfrac{1}{2}F_1(y) + C\left[F_2(x) + \frac{\pi^{1/2}}{2}F_3(X)(cNt)^{1/2}\frac{\sigma_0^{1/2}\Gamma_\gamma}{E_0}\right] \quad (2)$$

* J. E. Wilkins, Jr., CP-3581(1946).

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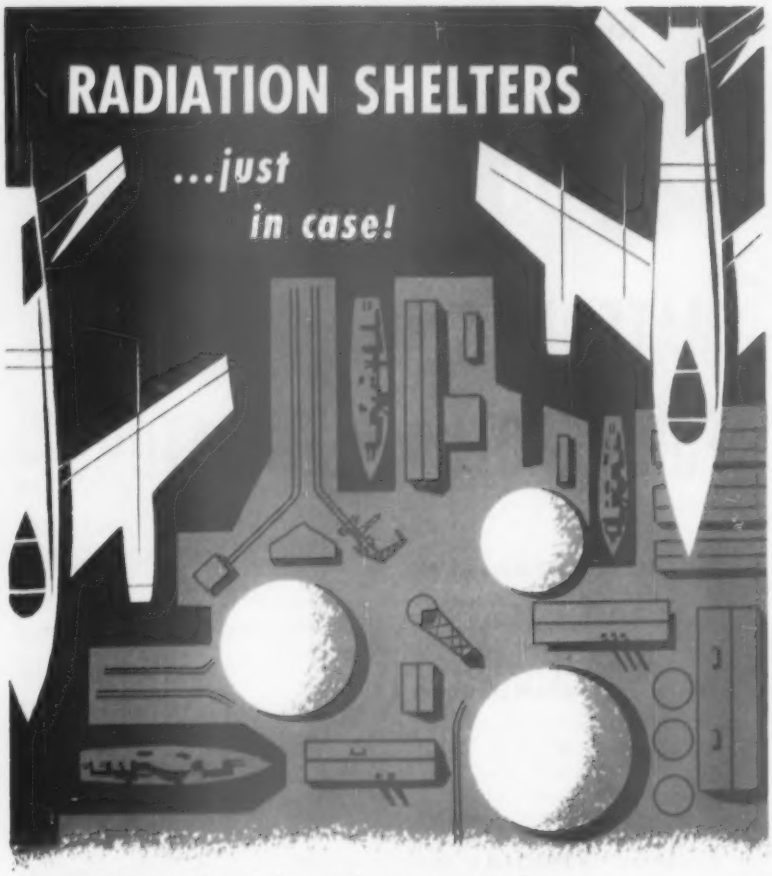

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where $y = Nt\sigma_{th}$, $x = Nt\sigma(E_1)$, and $X = \frac{1}{2}Nt\sigma_0$; c = fractional abundance of isotope with resonance. The functions $F_1(y)$ and $F_2(x)$ are defined and plotted in Figs. 1 and 2 while $F_2(X) = \frac{4}{5} - 1/10X - 3/224X^2$, for large X.

The first term on the right hand side of Eq. 2 is the absorption of thermal flux by the $1/v$ absorber, the second term is the absorption of epithermal flux by the $1/v$ absorber,† and the third term is the absorption of the epithermal flux by neutron resonance capture.

Implicit in the derivation of Eq. 2 is the assumption that the changes in angular energy distribution experienced by the flux as it penetrates into the slab are negligible. Also no allowance was made for neutron scattering or Doppler broadening in treating the resonance capture. Depletion of resonance flux has likewise been neglected in the derivation.

The last neglect can be corrected by adding a surface absorption term $\alpha S/M$, where S is the surface area, M is the mass of the absorbing material and α is a constant. Also Eq. 2 can be extended for absorbers with multiple non-overlapping resonances by replacing the third term with a sum over the resonances. If these refinements are made together with the approximation $F_2 \approx \frac{4}{5}$ (good for large X, which is the usual case in control rod work), Eq. 2 becomes

$$A = \tfrac{1}{2}F_1(y) + C\left[F_2(x) + 1.18(Nt)^{\frac{1}{2}} \sum_i \frac{(c_i)^{\frac{1}{2}}\sigma_{0i}{}^{\frac{1}{2}}\Gamma_{\gamma i}}{E_{0i}}\left(1 + \frac{\alpha S}{M}\right)\right] \quad (3)$$

It should be emphasized that Eq. 3 gives only the neutron absorption by a control element for a constant source of neutrons. It does not say anything directly about the effect of the element on the reactivity or the flux distribution of the reactor. To determine these effects it is necessary to make cell calculations that take into account the detailed distribution of fuel, moderator and control rods.

As might be expected, however, experience has shown that there is a close correlation between the reactivity worth of a control element and its effectiveness as defined by Eq. 3. The

† The epithermal neutron absorption for an absorber obeying a $1/v^n$ law is $(C/n)F_2(x)$. For example, the cadmium absorption curve above 0.18 ev obeys a law $\sim 8/E^4 = 8/v^8$. Hence, epithermal absorption by cadmium above 0.18 ev is given by $(C/8)F_2(x)$, where $x = Nt\sigma(0.18\text{ ev})$.

relative merits of various reactor materials can thus be evaluated by using Eq. 3 to calculate the effectiveness of each material.

Experimental Check

A heterogeneous thermal reactor at Argonne was used to verify experimentally the correlation between the effectiveness and reactivity worth of a control element. Both measured and calculated values of the effectiveness were obtained for several 10 in. × 3 in. control rod slabs of different thicknesses and materials.

The measured value in each instance is simply the experimentally determined worth in inhours of the control element, multiplied by an appropriate constant to transform it into effectiveness. This constant was chosen by arbitrarily setting the reactivity worth of one of the cadmium slabs equal to an effectiveness of 0.50. In deriving the calculated values, Eq. 3 was normalized to agree with this reference point. In addition Eq. 3 contains two empirical constants, C and α, that are fixed by the characteristics of the reactor.* Measured values of the effectiveness were substituted into Eq. 3 for two hafnium slabs, one 0.100 in. thick and the other 0.200 in. thick. The two simultaneous equations were then solved to give $C = 0.055$ and $\alpha = 1.5$.

Using these values for C and α, the validity of Eq. 3 was tested by calculating the effectiveness of several other control slabs and comparing the results with the experimental data. As can be seen from the table, the measured and calculated values of effectiveness agree to within about 6%. Possible sources of discrepancy are limitations of theory of the method, as explained above, and errors of measurement (±2%).

Using Eq. 3, the effectiveness of europium in a thermal reactor was calculated and found to exceed that of any other material of the same thickness for which cross section data is known. In Eq. 3 the value of the constant $\alpha = 1.5$ was obtained empirically, and is not expected to apply for

* An approximate value for C is given by its average value in the reactor, $C_{avg} = (\Sigma_a)_{avg}/(\xi\Sigma_s)_{avg}$ which is related to the ratio of the average values of the thermal and epithermal flux in the reactor. The exact value of C depends on the flux ratio at the surface of the control element and therefore will not be the same as C_{avg}. (For instance in the reactor described here $C_{avg} = 0.0675$ while the experimental result was $C = 0.055$.)

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TABLE 1—Comparison of Calculated and Experimental Values of Effectiveness for Various Control Rod Materials

Alloy materials and thickness (in.)	*Effectiveness*		*% discrepancy*
	Calculated	*Measured*	
0.100 Hf + 0.095 stainless steel	0.533	0.545	−2.2
0.150 Hf + 0.095 stainless steel	0.617	0.607	+1.6
0.20 Hf	0.656	0.654	+0.3
0.25 Hf	0.686	0.680	+0.9
0.100 Hf + 0.020 Al + 0.100 (Cd-Ag)	0.70	0.69	+1.4
0.100 Hf + 0.020 Cd + 0.100 Hf	0.708	0.698	+1.4
0.020 Cd + 0.15 Al + 0.020 Cd	0.50	0.496	+0.8
0.10 Co	0.37	0.39	−5.1
0.20 Co	0.47	0.49	−4.1
0.25 Co	0.50	0.52	−3.9
0.100 (0.3 Cd + 0.7 Ag)	0.590	0.556	+6.1
0.25 (0.3 Cd + 0.7 Ag)	0.630	0.654	−3.7
0.100 Au	0.521	0.546	−4.6
0.25 Au	0.646	0.665	−2.8

TABLE 2—Relative Effectiveness of Europium and Hafnium

Parameter values				
C	0.055	0.055	0.070	0.0848
α_{Hf}	1.5	0	0	0
α_{Eu}	0	0	0	0
Hf effectiveness (1/8 in. slab)				
A_{th}	0.38	0.38	0.38	0.38
A_{epi}	0.0385	0.0385	0.049	0.0594
A_{res}	0.1338	0.0732	0.0931	0.1128
A_{tot}	0.552	0.4917	0.522	0.552
Eu_2O_3 effectiveness (1/16 in. slab, $N_{Eu} = 0.012 \times 10^{24}$)				
A_{th}	0.50	0.50	0.50	0.50
A_{epi}	0.1171	0.1171	0.1491	0.1806
A_{res}	0.068	0.068	0.0865	0.1048
A_{tot}	0.685	0.685	0.7356	0.7854
$A_{tot}(Eu)/A_{tot}(Hf)$	1.24	1.39	1.41	1.42
(1/8 in. slab, 15 w/o Eu_2O_3 in Fe, $N_{Eu} = 0.004017 \times 10^{24}$)				
A_{th}	0.50	0.50	0.50	0.50
A_{epi}	0.096	0.096	0.1222	0.148
A_{res}	0.056	0.056	0.0708	0.0857
A_{tot}	0.652	0.652	0.693	0.734
$A_{tot}(Eu)/A_{tot}(Hf)$	1.18	1.32	1.33	1.33

rods with high S/M values. The value of α should be between 0 and 1.5 for Eu_2O_3 rods, a lower limit being $\alpha_{Eu} = 0$. The ratios of the effectiveness of two Eu_2O_3 rods to that of a Hf rod 1/8 in. thick were determined and are listed in Table 2.

The greater effectiveness of the europium rods is due to the high σ_{th} values and strength for resonance capture. Furthermore, all of the isotopes of europium have high absorption cross sections; hence, the nuclear effectiveness of Eu has a long reactor life.

Boron is also a very good absorber of thermal and epithermal neutrons. Its life would be shorter than europium's since it has only one absorbing isotope.

Outlook for Waste Disposal

A Reader Asks . . .

Dear Sir:

The bearish impression, which you reported in your April '57 "Roundup" (p. 17) of the Nuclear Congress in Philadelphia, I thought to be well taken. I should like to offer an observation on a particular detail of the Congress that tends to support your view.

In the waste-disposal sessions, each speaker I heard prefaced his remarks with a statement that there is no permanent or long-range solution to the waste-disposal problem. This is, no doubt, an objective statement of fact. A more subtle inference taken from the series of papers was that there is no solution in sight, and worse, no enthusiasm or confidence that the problem will be solved. This seems a marked contrast to the attitude displayed a year or two ago.

Where there is no belief that a solution can be found, I suspect that the probability of finding a solution is vanishingly small. A between-halves pep talk from the coach would be in order now.

—Robert W. Clack, Instructor
Department of Chemical Engineering
Kansas State College
Manhattan, Kansas

. . . NUCLEONICS Responds . . .

As nuclear fission grows as a power source, disposal of fission-product waste becomes a problem of larger proportions. Since a plan has not yet evolved for final disposition of these wastes, one is tempted pessimistically to believe that the problem is insoluble.

By a survey of people close to the problem, NUCLEONICS *has found unanimous agreement that the outlook is definitely optimistic. Although no one recommends a single best disposal method, work is proceeding along several promising approaches.*

Cost is a factor of some significance. However, it is of secondary importance as compared with the biological hazard of highly radioactive waste since the radiation level would be intolerable if the wastes were released in an uncontrolled manner. Furthermore, governmental responsibility is necessary since the effective half-life of the fission products is longer than the expected lifetime of a corporation.

The present principal disposal method, tank storage, was born of war-time expediency. This technique should be useable until a sizeable nuclear industry develops. The principal objection to this method is that the container lifetime is shorter than the necessary radioactivity decay period.

The most promising, or at least most studied, method is fixation in an unleachable solid, such as an oxide or ceramic material. This material could be buried in a relatively uncontrolled manner. A method requiring much more study is discharge into geologic formations, e.g., salt domes and abandoned oil wells. Disposal at sea appears to be less probable, although this is feasible for the smaller quantities of low-level radioactive waste.

The apparent lag in disposal studies is minimized when one considers that a final solution cannot be formulated until the reactor-design picture becomes more settled. The disposal method must be defined to a degree by the over-all fuel cycle.

Several of those surveyed mentioned the industrial use of fission products as radiation sources, e.g., in chemical processing and food sterilization. A number of fission products, e.g., Cs^{137} and Kr^{85}, may find sufficiently profitable use to warrant their costly separation. However, mass use, in the form of separated or mixed fission products, sufficient to affect reactor-operation cost or the size of the disposal problem significantly, does not seem likely at present.

On the following pages are comments extracted from the opinions provided by the experts we surveyed.

. . . With a Survey of Expert Opinion (turn page)

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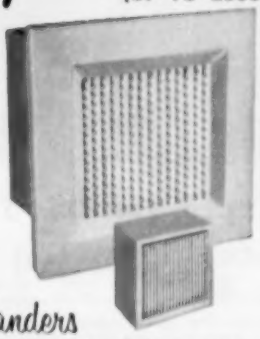

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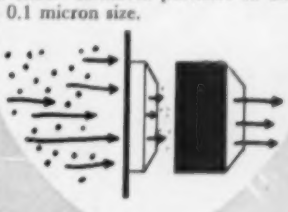

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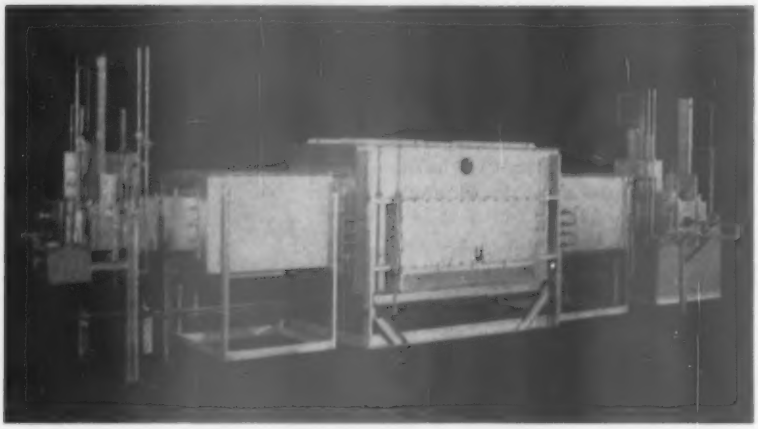

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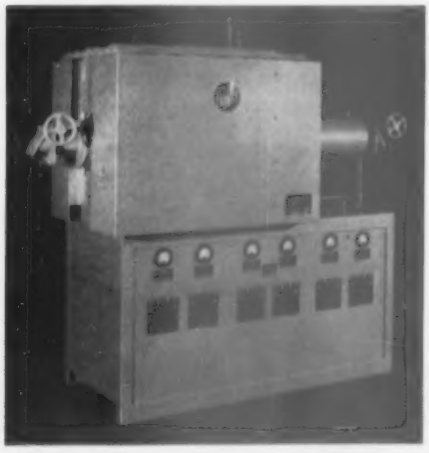

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Lieberman, *AEC*

Considerable development work has been done in a number of AEC installations on the problem of the ultimate disposal of high-level radioactive waste. At this stage, the following approaches appear to have at least reasonable possibilities of technical and economic practicality:

1. Fixation in inert media. Fixing the radioactive waste material, i.e., the actual fission products, in an inert solid carrier can limit its migration into the environment. The carrier containing the radioactive material can be permanently stored or buried in selected locations without deleterious effect on man or his environment. Fixation in clay, incorporation in feldspars, conversion to oxide or oxide-fixation of elutriant are systems under development.

2. Special separations. Because of the particular radiotoxicity and long half-life of Sr^{90} (25 yr) and Cs^{137} (33 yr), the removal and separate fixation and handling of these two isotopes would substantially reduce the effective life of the remaining material and facilitate its final disposal. With Cs and Sr removed, the possibilities of safe disposal into the environment under controlled conditions are greatly increased. Other transuranic elements may have to be similarly considered. The economic utilization of the Cs is an added incentive to such separations. Since Cs has fairly energetic emissions and a 33-yr half-life it is a useful radiation source. It should be noted, however, that at the present time these systems have not yet advanced to the full-scale, operating stage.

3. Direct discharge to selected formations. This waste-disposal method shows sufficient promise to warrant further investigation. It may be practical to dispose of the wastes into such formations as (a) spaces prepared by dissolution in salt beds or salt domes; (b) deep basins (5,000–15,000 ft in depth) containing connate brines and with no hydraulic or hydrologic connection to potable waters or other potentially valuable natural resources; (c) special excavations in shale.

4. Disposal at sea. I regard this as a possible, but improbable, approach to the ultimate disposal of highly radioactive wastes. The present lack of detailed oceanographic information, added to the loss of physical control of the material once disposal has taken place and the complex engineering

problems and high estimated costs involved in handling, transporting and actual placing of these high-level wastes in the ocean deeps, leads one to the conclusion that sea disposal is probably a secondary possibility.

It is not unlikely that a combination of the first three approaches will be used. From the standpoint of controlling radioactive materials, the possibility of utilizing fission products and the problems of handling and transporting, it appears at this time that the fixation approach is perhaps the front runner at this time. It should be remembered, however, that less work has been done on other approaches.

It is reasonable to argue that no industry can be considered a mature segment of our economy unless and until it handles and disposes of its wastes in an acceptable manner. However, there is sufficient basis for the belief that the nuclear energy industry can develop in a rational way without being bottlenecked by its own wastes, even though many complex engineering and administrative problems remain to be solved.

—JOSEPH A. LIEBERMAN, Chief
Sanitary Engineering Section
Engineering Development Branch
Division of Reactor Development
U. S. Atomic Energy Commission
Washington, D. C.

Eliassen, *MIT*

The industry is faced with the prospect of disposing of about one ton of fission products per day by 1980. Even after a year of storage for the decay of relatively short-lived products, the total activity of these fission products will exceed 100 billion curies/yr. Of course, fusion power may develop sufficiently to radically reduce the waste.

Nobody would dream of trying to dispose of this quantity of wastes to natural watercourses where the tolerance value for mixed radioisotopes is 10^{-7} μc/ml, or 420 c per cubic mile of water. Almost equally absurd would be storage for this amount of radioactivity as the accumulated solutions of high-level processing wastes would exceed 200-million gallons by 1980.

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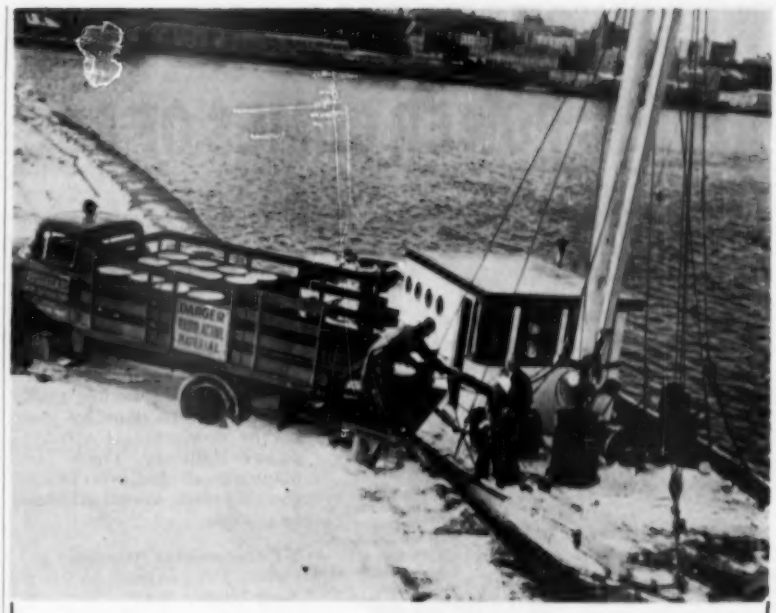

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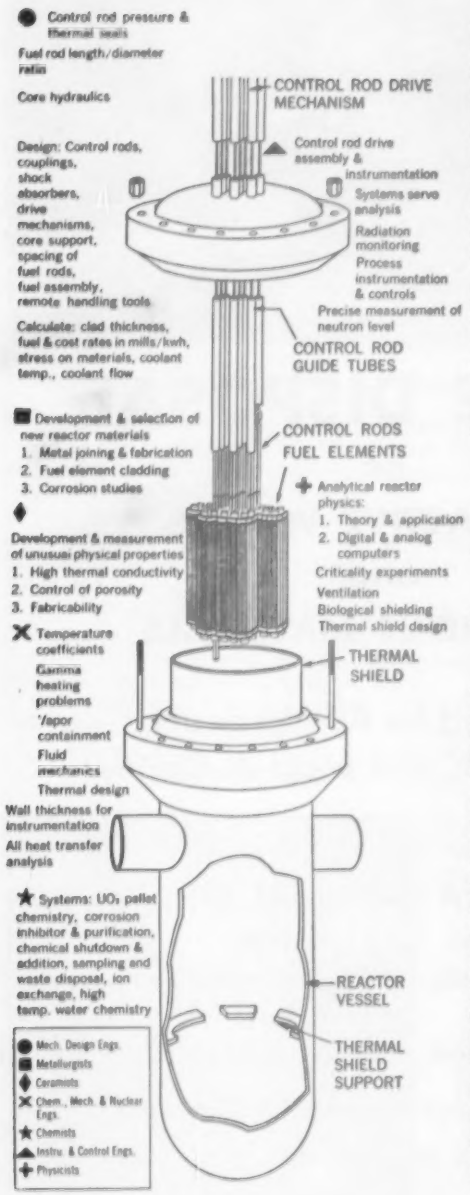
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Waste Disposal Outlook Cont.

rid of the tremendous quantities of aluminum nitrate resulting from the chemical processing as well as fission products in one operation. The systems that have shown the greatest promise to date are (1) CaO-Al_2O_3-B_2O_3-SiO_2 and (2) Na_2O-CaO-Al_2O_3-B_2O_3-SiO_2. Much work remains to be done, not only on aluminum, but also on zirconium and other metals that may be alloyed with reactor fuel material and that will be present in the wastes from fuel-processing plants.

The important point is that work is being pursued actively by many research and operating organizations and that progress to date has been most promising. Advancing technology in the processing of wastes containing fission products will most assuredly keep abreast of, and probably forge ahead of, the prophesied rate of growth of nuclear power plants.

—Rolf Eliassen
Professor of Sanitary Engineering
Massachusetts Institute of Technology
Cambridge, Massachusetts

Goodman, *NSEC*

Dear Sir:

We recently surveyed high-radioactivity waste treatment and disposal for the AEC. Mr. R. A. Brightsen, President, Nuclear Science and Engineering Corp., has highlighted some of the important conclusions of that survey in his statement to the Joint Congressional Committee on Atomic Energy on February 28, 1957:

" . . . Basically, it appears that disposal of radioactive wastes is a problem, not from an economic standpoint but from a biological hazard standpoint. This simple thought seems to become submerged in the deluge of words that are spoken on waste disposal. The state of the art is such that [liquid] storage of radioactive wastes appears to be adequate from a practical standpoint and will not contribute substantially to the cost of nuclear power. Indeed there are no other solutions on the horizon which can be rapidly brought into large-scale use. It is true that other methods may be developed which may be safer over a longer time period from the radiological standpoint and may be incidentally less expensive than the [liquid] storage approach.

It seems to us that the government must in the last analysis assume long-term responsibility for radioactive wastes, for the lifetime of some of the

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Waste Disposal Outlook Cont.

potentially hazardous species produced in fission far exceed the anticipated lifetime of any corporate entity.

"We think that the waste disposal problem should be attacked from two points of view: (1) Whereas the present technique (liquid storage) is satisfactory, it is not necessarily the best technique nor the cheapest . . . The [research] emphasis should be towards better methods from a biological hazards point of view rather than an economic point of view. (2) Concurrently, expanded effort should be instituted to evaluate the biological hazards of radioactive species."

The survey for the Commission further stressed that integration of reactor design and chemical processing with waste treatment and disposal is desirable. The waste problem should not be dealt with in a manner that isolates it from the over-all nuclear power picture. In this way it is felt liquid storage for long periods will be replaced within the next decade by a safer method.

—Eli I. Goodman,
Senior Chemical Engineer
Nuclear Science and Engineering Corp.
Pittsburgh, Pennsylvania

Gorman, *AEC consultant*

Dear Sir:

There has been a somewhat late appreciation of the importance of the ultimate disposal problem. This is due in part to the fact that at remotely located production plants it has been safe and, under government financing, economically feasible to store wastes.

With an expanded power program including many plants near centers of population, coming to grips with the problem cannot be deferred. Ways to achieve ultimate disposal of wastes must be found or there is a risk the industry may be checked.

It is important that answers to waste-disposal problems be found at a relatively early date, because the methods selected can have an important bearing on site selection.

One fundamental issue that remains is whether there is sufficient prospect that uses will be found for fission products in wastes to justify storing at least some of them. Currently it seems unlikely that sufficient uses will be found for all the wastes that will be produced in an accelerated power program.

The industry's dilemma therefore seems to be about as follows: If wastes

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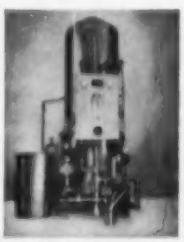

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are disposed of immediately, it would involve loss of an unknown amount of potentially useful and therefore economically valuable fission products. On the other hand, to hold the wastes might involve costs so high that they would exceed the revenue ultimately obtained from useful fission products.

The work done to date on waste disposal encourages us to believe that adequate solutions will be found. But it is important to urge that the nuclear power industry make stronger efforts to consider its problems in a balanced way and along a broad front. For example, effort in fuel-element development should always be accompanied by a corresponding effort to develop methods for chemical processing and disposing of the resultant wastes.

In particular it is hoped that a "dry" method of processing spent fuels will be developed to replace present "wet" chemical methods, which present many problems in ultimate or temporary disposal.

I fully expect that private industry will show increasing interest in waste disposal problems as the technology of the industry advances and as opportunities for profit are demonstrated.

—A. E. Gorman,
Sanitary Engineering Consultant
Division of Reactor Development
U. S. Atomic Energy Commission
Washington, D. C.

Hatch, *BNL*

Dear Sir:

The methods of handling high-level radioactive wastes today are the same as they were ten years ago, when, admittedly, there was no practical alternative to storage in underground tanks. It does not follow, however, that no sound progress has been made toward a more permanent solution of the problem.

For one thing, there is now fairly widespread agreement that the long-lived fission products "fixed" in insoluble solids should be, potentially, far less hazardous than when they were in liquid or soluble form. Moreover, a number of feasible and practical methods of fixing the fission products in stable solids have been demonstrated at laboratory and small-pilot-plant levels.

Although a fair amount of research and development effort has been extended in an attempt to stabilize more

permanent methods of disposal, it would be something less than realistic to conclude that the magnitude of the effort or the emphasis given to it has reflected with a driving interest to find a more permanent solution to the disposal problem. Actually, it may well require something of a breakthrough in the over-all planning for atomic power development before the more permanent disposal methods are really attractive if the initial costs are higher than for storage in tanks.

It is quite possible, however, that the situation may reverse itself with the advent of private ownership of wastes. The problems to be faced in attempting to calculate private insurance risks with respect to the wastes when several centuries are involved are bound to be formidable. The more permanent methods of disposal, such as fixation in solids, also may be the cheapest.

It is doubtful, moreover, whether we are presently in a position to comprehend more than a small fraction of the problems that would face us in the event of a widely disseminated very low level of contamination of our biological environment with Sr^{90} and Cs^{137}. This could become an outstanding case in point where the proverbial ounce of prevention was seen in retrospect to be invaluable since no amount of money would then buy the desired cure.

Let us, then, proceed to design our radioactive-waste-disposal processes and works so that future generations can take it for granted that we aimed squarely to insure their protection and in so doing placed a reasonable guarantee upon our own.

—L. P. Hatch
Brookhaven National Laboratory
Upton, New York

Healy, *HAPO*

Dear Sir:

The costs of disposing of the radioactive wastes from nuclear power generation will be appreciable but should not prevent reactors from becoming competitive with more conventional methods of power generation.

The waste-disposal experience accumulated by the operation of production reactors for the AEC over the past decade provides an excellent index to the problems to be encountered and to the required methods of solution. As an example, the disposal of volatile effluents from major operations plants is now controlled by extensive filtration and chemical treatment of the gases so that emissions that would otherwise be encountered routinely result only from infrequent, major failures of equipment.

At Hanford a large portion of these wastes is now effectively immobilized in the form of "sludges" at the bottom of tanks. Experimental work is proceeding on the possibility of gelling the liquids above the solids so that this method of disposal will be truly permanent.

The conditions for disposal in tanks are nearly ideal at the Hanford site because even with failures of the tanks there would be no serious leaching of the solidified contents by natural water. This serves to emphasize the importance of the waste disposal needs in the selection of sites for separations plants. In fact, it may be necessary to locate future separations facilities at some distance from the reactor because of the conflicting requirements of locating the reactor according to power needs and the separations plants according to the environment.

There does not appear to be any unique solution to the waste-disposal problem. Instead the least costly procedure to assure safe disposal for a given type of plant and a given environment will be used. This is the conventional approach that has been used by engineers in designing plants and waste-disposal systems for other industries.

Disposal methods that retain the radioisotopes in a specified region for which control is planned appear to be preferable to widespread dispersion methods because of the concentrating that can occur in the biosphere. At the same time, it must be realized that no retention method is perfect and that some release will occur either in the form of low-level, large-volume waste streams from separations plants or from the disposal site itself. The basic criteria of required efficiency of disposal must be derived from knowledge of the effects of the isotopes on the environs.

—J. W. Healy
Hanford Atomic Products Operation
Richland, Washington

Rodger, *ANL*

I agree that progress in waste disposal has been a little disappointing. There is not an immediate pressing need for a better solution to the problem, and in such a climate, spectacular progress is difficult to generate.

It seems clear, however, that if a

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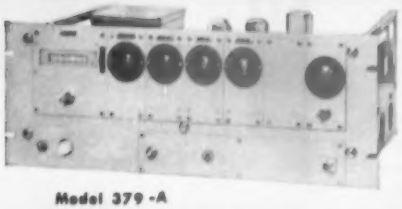

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Waste Disposal Outlook Cont.

nuclear-power economy is to grow, as many predict it will, it must be capable of living with its neighbors under a variety of conditions and in close proximity with many people. Under these circumstances most, but not all, of the people working in this field feel that more permanent solutions are required than those available to us now. There is considerable evidence of a rekindled interest in these problems and I do not feel that Mr. Clack's pessimism is completely justified.

The real cause for pessimism lies in the fact that as yet we have not devised a final resting place for either liquids or solids that is generally accepted as satisfactory in an "ultimate" sense. This is the portion of the problem that, in my opinion, needs additional work. The problem is complicated by the fact that numerous disciplines, including that of the politician, are involved. Since it would appear that a storage cost of the order of $\$50/ft^3$ could easily be borne by a nuclear power economy, the economic restrictions on the problem need not be too exacting.

It appears to me that the over-all waste storage problem is capable of solution. The fact that it has not yet been realized need not be the cause of great dolor.

—W. A. Rodger, Associate Director
Chemical Engineering Division
Argonne National Laboratory
Lemont, Illinois

Stevenson, *Phillips*

It is highly improbable that present waste-disposal methods will suffice for the long run for two principal reasons: (1) Present reprocessing methods may very possibly be superseded, at least in part, by methods particularly adapted to specific fuels that will produce wastes of different types and require different disposal means. (2) Just as reactors and processes will be improved, so also will waste storage methods be improved as long as there is room for improvement and as long as safer and more economical means can be demonstrated.

Not until the success of various reactor schemes now under development is established can there emerge definite concepts of optimum over-all fuel cycles. The latter will define reprocessing schemes and consequently means for waste disposal.

There appears to be little likelihood that disposal means can be found that

will not involve controlled containment of the fission products. They cannot be dumped anywhere and forgotten as may be done with normal industrial wastes. This is due simply to the great quantities of radioactivity involved and the moderate-to-long half-lives of important constituents.

It appears that within a few years there will be several demonstrated and acceptable methods for storage of aqueous-process wastes in solid form and that the cost of these methods will not be excessive. In the meantime it is probable that significant improvements will be made in the storage of such wastes or those that may result from the processing of specific fuel compositions as liquids, and that means for the recovery of some fission by-products will have been demonstrated. The latter may aid in reducing the net cost of waste disposal.

Presently there are uncertainties as to the standards that will be set for nuclear waste disposal by various regulatory bodies. If it is assumed that these will be resolved on a reasonable basis, it does not appear that waste-disposal problems should constitute a major barrier to private fuel processing of fuel from power reactors or to the development of safe and economic nuclear power. Although the problem presently appears difficult, a reasonable solution appears to be achievable once the scope and requirements for such processing can be more clearly defined.

—C. E. Stevenson, Technical Director
Chemical Processing Plant
Atomic Energy Division
Phillips Petroleum Company
Idaho Falls, Idaho

Wolman, *Johns Hopkins*

An unequivocal answer to the problem of waste disposal is not at hand. There is no reason to take refuge, however, in a too pessimistic state of mind. The other extreme of optimism is at present equally unrealistic and untenable. To steer a middle ground between the two extremes is perhaps a "must" because:

1. Present methods of disposal, particularly for high-level wastes, are expensive, ill-adapted to a growing industry and fall far short of anything definable as truly "disposal." In almost every instance present methods may be generally encompassed in what

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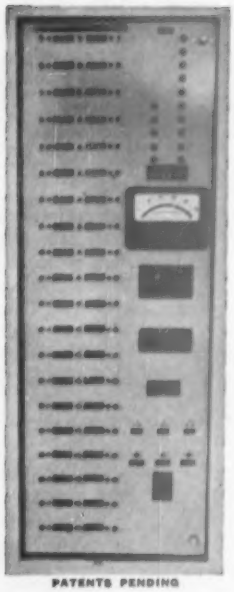

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may be called a "holding" state, carefully monitored, adapted to each environment and permitting release to nature only under managed scrutiny. Capital, operation and supervisory costs will remain high for such procedures for a long time to come—unless present and future research moves somewhat more rapidly than in the past toward better solutions.

2. The Atomic Energy Commission has allotted over recent years generous amounts of dollars and talent to research and development in this wastes sector. In some areas, such as in stack-gas cleaning, a great deal of progress has been made, although processes are still costly.

A vast amount of work is being assiduously pursued in this country, Canada and England on the fixation of radioactivity in stable, solid media. The agenda of reports at the recent AEC "work meeting" at The Johns Hopkins University in June, 1957, gave evidence of the wide range of activity in the study of fixation in these three countries. The complexity of the issues may be best indicated by brief reference to the major topics, reviewed at these sessions; carrier and conversion media—natural and synthetic; determination of stability—degree of fixation; fluids and solids—reactors and contactors; heat evaluation and dissipation; air cleaning; conveying and transport; storage and disposal.

Few of the fixation processes have been translated into plant-scale performance. To this extent, progress is slow. If one remembers, however, that the attack is only of the last five years and in an area perhaps the most baffling in industrial history, hope of answers may be high.

The outlook in the waste-disposal field must become optimistic, or else maximum, controlled use of nuclear fission will be seriously curtailed.

Perhaps the major negative aspect of the whole problem lies in the ostrich-like attitude of some people that the problem does not exist! This kind of optimism is not a real antidote to pessimism, because it can lead only to complacency, reduction of research and development and deferment of better answers.

—Abel Wolman, Chairman
Department of Sanitary Engineering and Water Resources
The Johns Hopkins University
Baltimore, Maryland

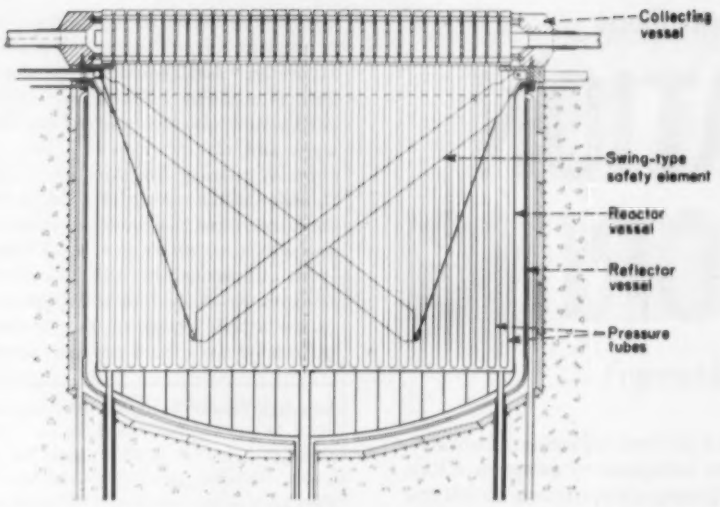

FIG. 1. Swedish 444-Mw gas-cooled reactor incorporates fuel elements in individual pressure tubes to permit unpressurized reactor vessel of aluminum. D_2O moderator fills vessel through center pipe, is drained through side pipes. H_2O reflector fills annular space between reactor vessel and reflector vessel through outside pipes, is drained through center pipe

Swedish Power Reactor Proposal

By RAGNAR LILJEBLAD
Allmänna Svenska Elektriska Aktiebolaget, Västeras, Sweden

We in ASEA (Allmänna Svenska Elektriska Aktiebolaget) have followed developments in atomic energy with attention and interest since 1946. The possibilities of atomic energy competing with conventional sources of energy were, however, long so uncertain that a private company could not justifiably sacrifice great sums to work out proposals for atomic power plants.

It was clear, however, even at that time, that a country like Sweden must rely on natural uranium for fuel. If one wants to avoid the costly and gigantic plants built in England—these being justified partly from experience already gained with big plutonium-producing reactors—it was also clear that

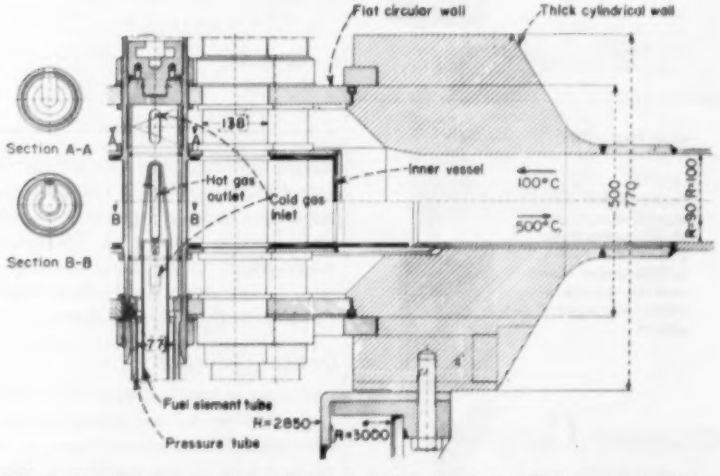

FIG. 2. Sectioned view shows detail of double-chamber collecting vessel. Tubes passing through thick cylindrical wall bring cold gas into outer chamber and hot gas out of inner chamber. One inlet and one outlet pipe has been rotated into plane of section. Cold gas enters pressure tube through small slots; hot gas exits via large slot

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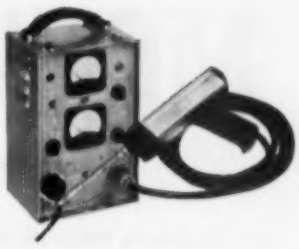

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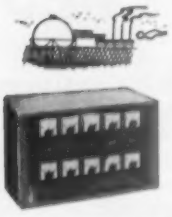
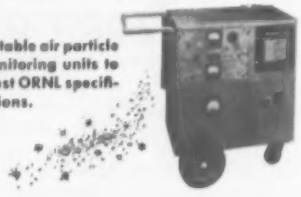
To detect, measure, record or control radiation of almost any type or intensity . . . with complete systems to AEC specifications—that's *part* of Victoreen's radiation monitoring story. So no matter what your radiation monitoring problem, it will probably pay you to check with Victoreen *first*.

area monitoring



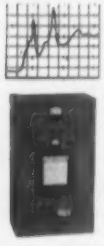
Flexible, fully proven remote area systems to AEC requirements for radiation monitoring from a single control center.

air particle monitoring



Portable air particle monitoring units to latest ORNL specifications.

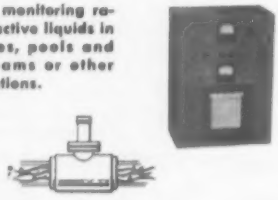
fission products monitors



A reliable monitoring system based on MTR design at Idaho Falls for detection of fission product activity in coolant stream.

water monitors

For monitoring radioactive liquids in pipes, pools and streams or other locations.



neutron monitors

Fast and thermal neutron monitoring systems designed for bulk shielding and dosimetry studies.

gas monitors

Designed for continuous monitoring of radioactive stack gases. Contains built-in alarm system to operate external control circuits.

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AA-6301

heavy water rather than graphite must be used as the moderator. The price of heavy water, however, was for a long time about 1,000 kronor ($193) per kg, and, also, the price of uranium was doubtful.

On a journey to the U. S. and Canada in the spring of 1954, I became convinced that these prices would probably soon settle at a much lower level. Consequently, ASEA began, in the summer of 1954, to work seriously in the atomic energy field. At first, we started work on a proposal for an atomic power plant of 100,000–150,000 kw electrical output. Later on, we also began to work on a proposal for a space-heating reactor of 100,000 kw heat output.* We have worked in close cooperation with the State Power Board in both of these projects.

Swedish Power Reactor Parameters

Output—heat	444 Mw
—electricity	135 Mw
Fuel load (UO_2)	42 tons
Specific power	10.6 kw/kg
Moderator load (D_2O)	75 tons
CO_2 coolant	
Flow	958 kg/sec
Inlet temperature	100° C
Outlet temperature	500° C
Pressure (1 bar = 14.5 psia)	100 bar
Pressure drop through reactor	3.5 bar
Average velocity in center tube	21.5 m/sec
Fuel elements	
Number	955
Rods per element	7
Rod diameter	15.8 mm
Canning thickness	1 mm
Rod length	3,200 mm
Heat flux canning surface	
Avg. for reactor	18 w/cm²
Avg. for center element	33 w/cm²
Max. for center element	48 w/cm²
Max. canning temperature	525° C
Reactor vessel	
Material	Al
Inside diameter	5.7 mm

Design Philosophy

Having determined that it would be impracticable to use anything other than natural uranium and heavy water, we next took up the problem of choosing a cooling medium. In our first

* To be described in a future issue of NUCLEONICS.

proposal, we considered using sodium, but rejected it because of the risk of contact between sodium and water. A later proposal was worked out using helium, but, because of the difficulty of getting this gas in sufficient quantities, we rejected it also. In our search for a suitable cooling medium, we even considered diphenyl and a eutectic mixture of bismuth and lead but finally decided on CO_2.

With CO_2 as the cooling medium, the outgoing gas should be at temperatures around 450° C to get satisfactory efficiency and low pumping power (less than 5% of turbogenerator output.) The uncertainty here is what effect these high temperatures would have on the canning and structural material in the core. We had originally intended to use zirconium for this purpose but dropped it because of its high cost and the possibility of its being adversely affected by the coolant at high temperature. We finally choose an aluminum alloy for the fuel-element canning and Mg alloy and stainless steel for the structural materials.

Our next decision concerned the subject of a pressure vessel. In our opinion, a big stationary power reactor ought not to be constructed with a pressure vessel of the types used in the Calder Hall and Shippingport reactors. The necessity for a very large wall thickness makes the whole design rather monstrous. If this statement is valid for a reactor fueled with enriched uranium and moderated with light water, it is even more appropriate for one with natural uranium and heavy water, where the volume is larger. As a consequence, we have designed a reactor in which the reactor vessel is unpressurized and fabricated from relatively thin-walled aluminum.

Final Design

One might ask: How can you construct a reactor using CO_2 as the cooling medium and not have a pressurized reactor vessel? The answer is that each fuel element is contained in its own pressure vessel, in this case a tube that is not much larger than the element itself. The moderator is then free to be at atmospheric pressure, and the reactor vessel can have thin walls. To repeat, the only pressurized parts of this reactor are the collecting vessel and the pressure tubes—the moderator and reflector are at atmospheric pressure.

The pressure tubes are suspended from a collecting vessel, as can be seen in Fig. 1. The collecting vessel forms

Here's news about

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model 751

Model 751 Linear Amplifier (ORNL Spec. DD2) for scintillation spectometry, reactor control, etc., and other applications requiring high gain and resolution, good linearity, and fast overload recovery.

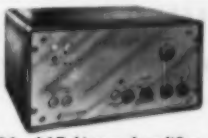
model 565A

Model 565A Micro-Microammeter Electrometer (ORNL Spec. Q8268). A stable and reliable instrument for measuring low currents in ion chambers and low impedance networks.

model 727

Model 727 Logarithmic Count Rate Meter (ORNL Spec. Q1454B). A wide range, five decade instrument for use with all types of radiation detectors.

model 672A



Model 672A, A1D Linear Amplifier (ORNL Spec. Q1326). Amplifies low signal level pulses from radiation detectors such as ionization chambers, proportional and scintillation counters.

model 695

Model 695 Single Channel Differential Analyzer (ORNL Spec. Q1192). A differential pulse height analyzer for separating pulses of varying amplitudes.

model 683

Model 683 Ultra-Stable Power Supply. An ultra stable dc voltage source of the type required for precision scintillation counting, etc.

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J-57006-R

Testing Reactor
Westinghouse Electric Corporation
P. O. Box 1075, Pittsburgh 30, Pa.

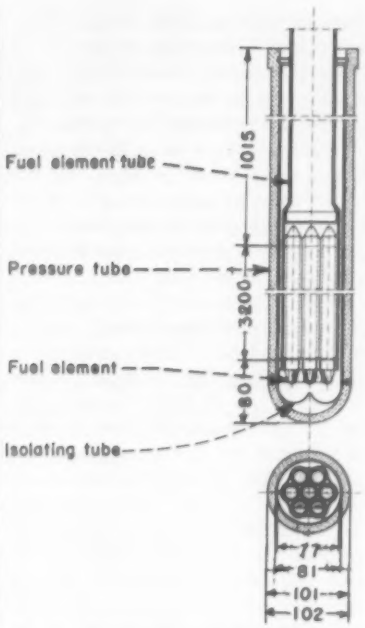

FIG. 3. Sectioned view through tip of pressure tube shows fuel elements, composed of seven UO_2 rods 3,200 mm long, contained in isolating tube. Cold gas flows down outside isolating tube; hot gas flows up around rods

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the cover of the heavy-water-filled reactor vessel. The double-walled reactor vessel is suspended in a steel-lined concrete pit. Between the double walls is the light-water reflector.

In a reactor of this size, very little loss of reactivity and increase in burnup is caused by using light water instead of graphite, and the design is, in this way, much simplified. The proportion between the length of the fuel elements and the diameter of the reactor vessel is not the optimal one. The length of the fuel elements was diminished and the diameter of the vessel increased to reduce the pumping power. The loss in burnup by this change is less than 10%.

Figure 2 shows in detail a partial section of the collecting vessel. The collecting vessel has two chambers, one inside the other. Cool gas at 100° C enters the outer chamber through the larger horizontal pipe at the right. It flows around the inner chamber, through two small slots in the pressure tubes and down to the fuel elements. The hot gas (500° C) flows out of the pressure tube through the large slot, into the inner chamber and out through another, smaller, horizontal pipe.

The inner chamber is insulated on the inside and includes telescoping piston-ring sealing between it and the

horizontal outlet pipe. The thick cylindrical wall of the collecting vessel is a heavy cast-steel ring that is connected to the flat circular walls by elastic elements. This arrangement is provided to avoid heavy radial stresses in the circular walls of the reactor vessel.

The UO_2 fuel rods are canned in the new alloy SAP (Al with 10–13% Al_2O_3). This alloy keeps its strength well up to 500–550° C. The fuel element (see Fig. 3) consists of seven such rods (see table on p. 166 for dimensions) enclosed within a long tube. The fuel element is located inside the pressure tube.

Also inside the pressure tube is a thin-walled isolating tube. The 1-mm clearance between the pressure and isolating tubes is filled with practically stagnant CO_2.

The pressure tubes and the isolating tubes are made from magnesium alloy with a neutron absorption cross section only a fraction of that of zirconium. As a protection against corrosion, aluminum tubes with a 0.5-mm wall thickness cover the outside of the magnesium pressure tubes.

The tubes surrounding the fuel rods are also double tubes. The outer tubes are thin magnesium tubes, and the inner tubes are made from stainless steel of 0.05-mm thickness. The clearance between the tubes is 1 mm.

The cooling medium flows down between the isolating tube and the fuel element tube. The baffle formed by the bottom of the isolating tube changes its direction so that it flows up around the fuel rods in the fuel element tube.

Because of this arrangement the incoming gas is only slightly heated on its way down. This provides less than 1% heat loss to the moderator and a considerably lower pumping power for a given temperature of the outgoing hot gas.

As can be seen from Fig. 2, a fuel element with surrounding tubes can be taken out of the reactor and replaced by a new assembly. The sealing between the pressure tubes and the collecting vessel is such that the gas pressure increases the pressure on the seal, thus avoiding leakage.

The main data for the plant are given in the table on p. 166. Safeties, loading arrangement, purifying system, shielding, etc., are of more or less conventional design. Long-time control is accomplished by raising the level of the moderator water and reflector water.

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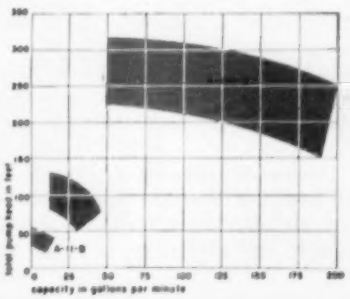
Order your immediate requirements now, or write for additional information: WESTINGHOUSE ELECTRIC CORPORATION, P.O. Box 868, Pittsburgh 30, Pennsylvania. J-57018



PERFORMANCE CHARACTERISTICS

Pump Models	A-11-B	A-30-B	A-150-D
Hydraulic Characteristics			
max. suction temp. °F	600	600	650
max. system pressure, psi	2500	2000	2500
net positive suction head required, feet	4	5	12
Electrical Characteristics			
line	220/60/3	220/60/3	440/60/3
rated kw input	.6	5.75	17.0
amperes per line	2.7	20.0	25.0
Dimensions and Weights (not to be used for construction)			
overall height	11⅛"	27⅛"	32⅛"
max. diameter	8⅛"	11"	16⅝"
suction nozzle, pipe size	¾"	1½"	3"
discharge nozzle, pipe size	½"	1¼"	2½"
weight, pounds, (approx.)	60	263	1025

Thirteen other standard models are assembled to order, and special ratings can be built to your specifications.

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APPLIED RADIATION

Sb^{124} Marking for A Safer Dynamite

Dynamite that remains unexploded in drill holes is a hazard in mining operations. While it can usually be located, sometimes it is not, and further drilling leads to accidental explosion. Scientists of the Canadian Dept. of Mines and Technical Surveys have developed a radiotracer method that serves as an additional safeguard where other types of inspection are uncertain.*

They need an isotope with fairly short half-life to avoid accumulation of activity in stores and explosion sites. It must be nontoxic in the atmosphere, compatible with the explosive, and insoluble in water. The gamma ray should be of high enough energy for easy detection.

Sixty-day antimony-124 with 1.7- and 0.6-Mev gammas satisfies these requirements for an appropriate isotope, at least for preliminary tests. The necessity of long storage and other factors might make another isotope appropriate at another time. Only 8.2 μc of Sb^{124} in each dynamite cartridge (7 mc/250 lb of explosive) is enough to be easily detectable. Yet there is not enough activity in mixing processes or stacked cases of dynamite to produce hazardous levels of radiation.

Two methods of labeling the cartridges were tried: (a) making the isotope adhere to the outside in marking inks or adhesive tapes and (b) mixing it with the constituents during manufacture. The outside labeling turns out to be unsatisfactory because after the explosion the radioactivity remains in powder burns to give a false indication. With the internal labeling, unexploded cartridges can be found either in the drill holes or in the pile of "muck" that is made by the explosion. A special portable detector (see page 90) has been developed to provide the appropriate amount of directional sensitivity.

* G. G. Eichholz, A. O. Smith, A. Bauer, *Canadian Mining and Metallurgical Bulletin*, March (1957) p. 117

AEC Lists Gamma, Neutron Facilities

Where can you perform irradiation experiments? The AEC has provided a partial answer in a selected list of neutron and gamma irradiation facilities.* Some 32 reactors are listed as neutron irradiation facilities along with 14 gamma facilities all having the equivalent of 3,000 curies of Co^{60} or more.

An opening table provides data on the reactors such as maximum fluxes, nature of core, moderator, reflector, coolant, and shield. Following this are 1-3-page sections devoted to each of the reactors including drawings, operating schedules, experimental facilities, and availability for irradiation service. Of the 26 listings (the seven Hanford reactors are listed together), 17 indicate that the reactors are available or can be made available for public use. In some cases this is limited to AEC contractors. Seven indicate no provision for classified experiments; all of the others have such provisions. The highest fluxes listed are those for ETR and MTR.

The 14 gamma facilities are similarly described in a preliminary table, and succeeding pages are devoted to each facility.

The two tables that follow on pp. 172 and 173 are from material in the AEC report. The first is a listing of reactor facilities available for neutron experiments. It is essentially a duplication of the introductory table that is part of the AEC book.

The second table lists gamma facilities. It is a somewhat simplified version of the table that is in the AEC report. Each facility is described in terms of the maximum gamma dose available in roentgens per hour, the nature of the source, the environment in which irradiation takes place, and whether or not public use is permitted.

To extend this listing of gamma facilities a third table has been added. It is a bibliography of NUCLEONICS articles of recent years that describe gamma irradiation facilities not listed in the AEC book.

* Selected List of Neutron and Gamma Irradiation Facilities in Operation, Being Built, or Planned, compiled by John H. Martens and F. G. Minuth (Technical Information Service, USAEC, April, 1957—available from Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., 60 cents)

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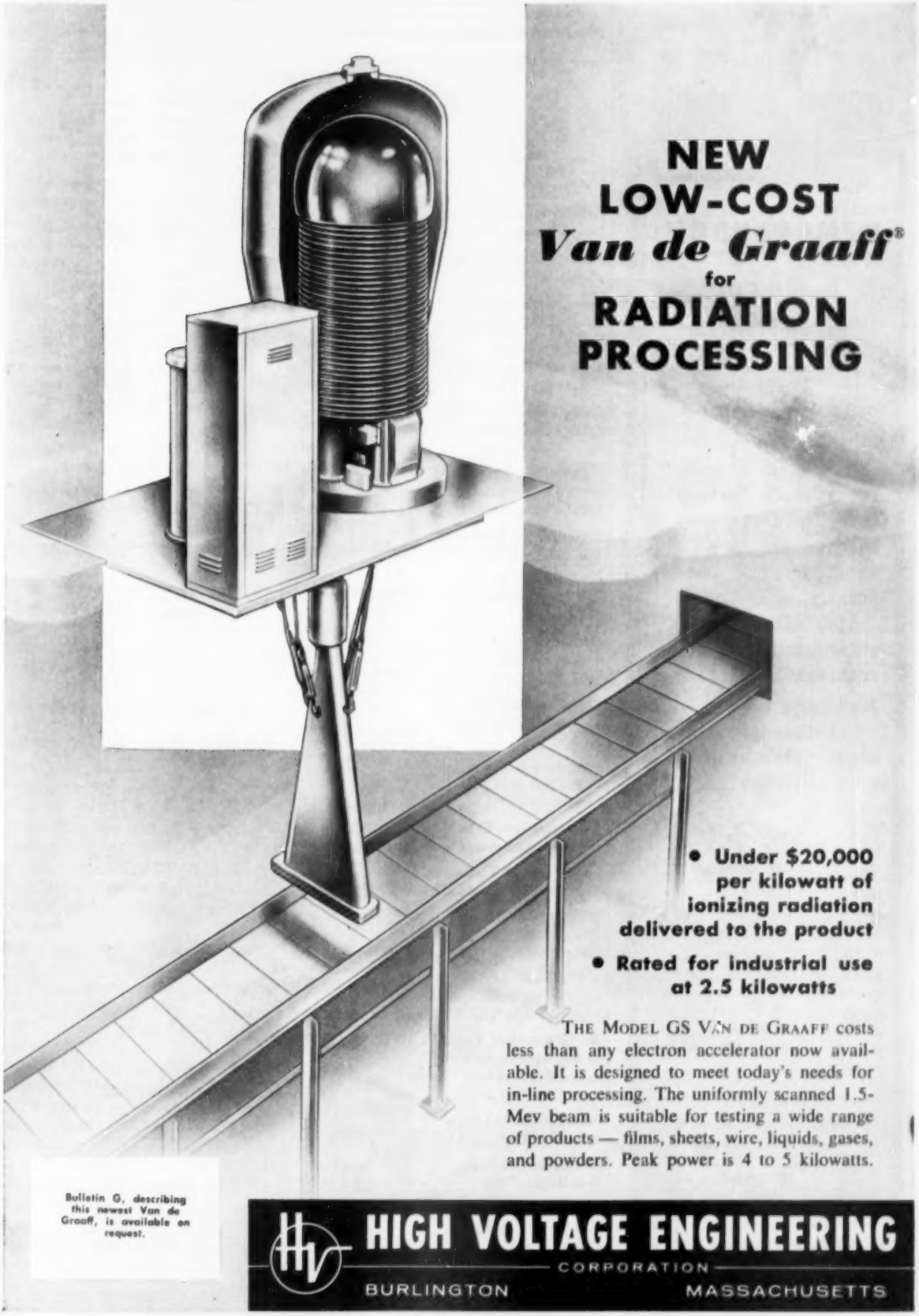

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Neutron Irradiation Facilities

Reactor	*Maximum flux*			*Clearance required*	*Classified experiments?*	*Public use?*
	Neutrons ($n/cm^2/sec$)		*Gamma (r/hr)*			
	Fast	*Thermal*				
Armour Research Institute, Chicago, Ill.	10^{12}	1.7×10^{12}	10^6	none	yes	yes
Battelle Memorial Institute, Columbus, O.	1.8×10^{13}	1.4×10^{13}	10^8	none	yes	yes
Brookhaven National Laboratory, Upton, L. I., N. Y.	2×10^{12}	4.3×10^{12}	2×10^6	none	yes	yes
Bulk Shielding Facility, Oak Ridge, Tenn.	10^{12}	10^{12}	10^6	Q	yes	yes
CP-5, Argonne National Laboratory, Lemont, Ill.	10^{13}	2×10^{13}	—	none	no	yes
ETR National Reactor Testing Station, Idaho Falls, Idaho	1.5×10^{15}	4×10^{14}	—	Q	yes	yes
Ford Nuclear Reactor, Ann Arbor, Mich.	10^{13}	10^{13}	—	none	no	yes
Ground Test Reactor, Convair, Fort Worth, Texas	3×10^8	4×10^9	7×10^6	military secret	yes	no
Hanford Atomic Products Operation, Richland, Wash. (7 reactors)	—	—	—	Q	yes	no
Industrial Reactor Laboratories,* Plainsboro, N. J.	6×10^{12}	3×10^{12}	8×10^8	none	no	uncertain
Livermore Water Boiler, U. of Calif. Rad. Lab., Livermore, Calif.	4×10^{10}	2×10^{10}	5×10^5	Q	yes	no
Livermore Pool Type Reactor,* Livermore	10^{13}	3×10^{13}	—	Q	yes	no
Low Intensity Testing Reactor, Oak Ridge	1.5×10^{12}	4×10^{12}	—	Q	yes	yes
MIT Research Reactor,* MIT, Cambridge, Mass.	5×10^{12}	3×10^{13}	10^8	none	no	uncertain
MTR, National Reactor Testing Station, Idaho Falls, Idaho	2.5×10^{14}	5×10^{14}	10^9	Q	yes	yes
North American Water Boiler, Atomics International, Santa Susana, Calif.	—	2×10^{12}	10^6	none	no	yes
Naval Research Laboratory, Washington, D. C.	10^{12}	3×10^{12}	10^7	none	yes	yes
Oak Ridge Graphite, Oak Ridge, Tenn.	10^{12}	1.1×10^{12}	10^6	Q	yes	yes
Oak Ridge Research Reactor,* ORNL, Oak Ridge, Tenn.	6×10^{13}	3×10^{14}	—	Q	yes	yes

* Not yet in operation.

Neutron Irradiation Facilities (*Continued*)

Reactor	*Maximum flux* — *Neutrons (n/cm²/sec)* — *Fast*	*Thermal*	*Gamma (r/hr)*	*Clearance required*	*Classified experiments?*	*Public use?*
Omega West Reactor, Los Alamos, N. M.	5×10^{13}	5×10^{13}	3×10^{7}	Q	yes	no
Pennsylvania State Research Reactor, University Park, Pa.	10^{13}	10^{13}	7.5×10^{6}	none	no	yes
NYU Pickle Barrel, N. Y., N. Y.	10^{8}	10^{8}	—	none	no	yes
North Carolina State College, Raleigh, N. C.	2×10^{11}	5×10^{11}	10^{6}	none	yes	yes
Sodium Reactor Experiment, Atomics International, Santa Susana, Calif.	1.5×10^{13}	4×10^{13}	9×10^{7}	Q or L	yes	no
SUPO Water Boiler, Los Alamos, N. M.	1.3×10^{12}	1.2×10^{12}	1.5×10^{7}	Q	yes	no
Thermal Test Reactor, KAPL, Schenectady, N. Y.	1.5×10^{10}	3.7×10^{11}	10^{6}	Q	yes	yes

Gamma Irradiation Facilities

Gamma facility	*Max flux (10^6 r/hr)*	*Source*	*Environment*	*Public use*
Argonne National Laboratory, Lemont, Illinois	3	MTR fuel	water	yes
Battelle Memorial Institute, Columbus, Ohio	2	Co^{60}	water or air	yes
Brookhaven National Laboratory, Upton, L. I., New York	1	Co^{60}, Ta^{182}	water or air	yes
Dugway Proving Ground, Dugway, Utah	4	MTR fuel	air	no
Fission Products Lab. (U. of Mich.) Ann Arbor, Michigan	0.18	Co^{60}	air	yes
General Electric Company (ANP), Cincinnati, Ohio	1.9	Co^{60}	water	no
Hanford Atomic Products Operation, Richland, Washington	—	Spent Co^{60} in fuel, 1957	water	(AEC contractors)
Knolls Atomic Power Laboratory, Schenectady, New York	2.4	Co^{60}	water	yes
MTR Gamma, Facility, Idaho Falls, Idaho	10	Fuel	water	yes
Phoenix Laboratory (U. of Mich.), Ann Arbor, Michigan	0.6	Co^{60}	water or air	yes
North Carolina State College,* Raleigh, North Carolina	5.4	Gaseous fission products	air	yes
Southwest Research Institute, San Antonio, Texas	10	Co^{60}	air	yes
Stanford Research Institute, Menlo Park, California	0.8	Co^{60}	water	yes
Wright Air Development Center, Wright-Patterson Air Force Base, Ohio	0.5	Co^{60}	air	no

* Not yet in operation.

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More gamma facilities. Since the AEC list describes only facilities with 3,000 curies of cobalt or more, a large number of smaller facilities that are in use are not mentioned. In addition, several large facilities have come into use during preparation of the book. Among these are the world's largest, the Oak Ridge cobalt-storage facility (NU, March '57, p. 98), the X-ray sources of Inland Testing Laboratories, and the 62,100-curie Co^{60} facility of Cook Electric's subsidiary, Nucledyne Corporation (for the last two, see below). Many of the irradiation facilities that are not listed in the book have been previously described in NUCLEONICS. The following table is a partial bibliography of these descriptions.

Gamma, X-ray Facility Bibliography

Facility	*Source (curies Co^{60} except as otherwise noted)*	NUCLEONICS *reference*
Continental Oil Co., Ponca City, Okla.	4 spent MTR fuel elements	(below)
Nucledyne Corp., Morton Grove, Illinois	62,100	(below)
Inland Testing Laboratories, Madison Wisconsin	Betatron, 3 other X-ray generators	(below)
Esso Research Center, Linden, N. J.	15,000 3,500	(below) August '57 p. 102
Cities Service Co., Cranbury, N. J.	6,000	August '57 p. 102
Magnolia Petroleum Co., Dallas, Texas	15	August '57 p. 104
Socony Mobil Oil Co., Paulsboro, N. J.	Spent fuel and Co^{60}	August '57 p. 104
California Research Company, Richmond, California	1,000	August '57 p. 104
Texas Company, Beacon, New York	35,000	August '57 p. 102
Sinclair Research Laboratories, Harvey, Illinois	4 spent MTR fuel elements	July '57 p. 108
Atomics International, Canoga Park, California	2,000	April '57 p. 115
Newport News Shipbuilding Co., Newport News, Virginia	50	April '57 p. 119
Oak Ridge National Laboratory	85,000–300,000	March '57 p. 98
Radiation Applications, Inc., Long Island City, New York	1,350	March '57 p. 100
B. F. Goodrich Research Center, Brecksville, Ohio	1,400	January '57 p. 96
Rensselaer Polytechnic Institute, Troy, New York	970	January '57 p. 99
Atomic Energy of Canada, Chalk River	100, 180	January '57 p. 108
Stevens Institute of Technology, Hoboken, New Jersey	300	November '56 p. 119
University of Notre Dame, Notre Dame, Ind.	375	October '55 p. 74
Worcester Foundation for Experimental Biology, Worcester, Massachusetts	135	March '54 p. 63
Nuclear-Chicago, Chicago, Illinois	25	July '53 p. 52

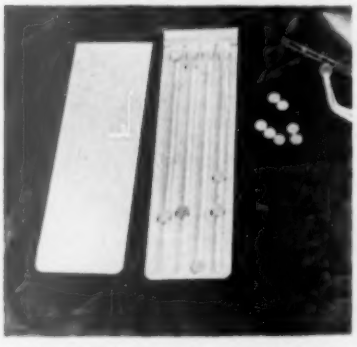
Industry, Therapy Use X-rays Jointly X-rays are in use around the clock at the recently established Radiological Testing Laboratories in Madison, Wis. During the day they are used for private-practice medical therapy and diagnosis. At night they are available for commercial radiation research and industrial radiography. Generating equipment consists of a 24-Mev Allis-Chalmers betatron capable of 150 r/min at 3 ft and 100-, 120-, and 280-kev Picker generators. The last is a rotational-therapy device.

In addition the laboratories are

equipped for isotope experiments. The extensive list of isotopes that they have on hand or have on order includes Au^{198}, P^{32}, I^{131}, Fe^{59}, Co^{60}, Cr^{51}, Sr^{90}, and radium.

Cook Electric Has Co^{60}—62,100 Curies Industry's largest cobalt source—largest in the country with exception of Oak Ridge's cobalt-storage facility—is in operation at the Inland Testing Laboratories of Cook Electric Co., Morton Grove, Ill. The 62,100-curie source was obtained from Atomic Energy of Canada last spring. It is especially intended for testing radiation-resistant lubricants for the Air Force, but it will also be available for other uses. The radiation cave in which it is installed is $16 \times 16 \times 15\frac{1}{2}$ ft in size. It has several accessibility ports, filtered air exhaust, manipulators, a viewing window, and an overhead crane.

15,000 Curies in Co^{60} Coins at Esso Another big Co^{60} source—one fourth the size of Cook Electric's (see above)—has just gone into operation at Esso's Linden, N. J., research laboratories. It is the most powerful source ever shipped from Oak Ridge for the use of private industry.



COBALT COINS in stainless-steel holders are Esso's new radiation source

The cobalt is contained in 300 nickel-plated disks. As shown in the photograph, these were dropped into the slots of stainless-steel holders. Remote welding equipment was used to seal the holders. The source will be used in the cave that has housed Esso's 3,500-curie source since 1955.

Kidde Constructs CONOCO Facility A shielded "beam-hole" room is an unusual feature in a gamma facility designed and constructed by the Walter Kidde companies for Continental Oil Co. in Ponca City, Okla. Like the Sinclair facility (NU, July '57, p. 108) it uses 4 spent MTR elements.

The beam-hole room is designed to receive up to a 4 × 4-in. beam of gammas through the wall that separates it from the cave. Other equipment includes manipulators, two viewing windows, a Kollmorgen periscope, and a labyrinth. The facility has been designed to use any source that delivers less than 10^6 r/hr to the inner cell walls.

An elevator raises the source from its storage pool, and in-pool irradiations can be performed in the 18-ft-deep canal.

Gammas Plus Cold for Food Storage Food preservation with doses of milliroentgens rather than megareps is being investigated by E. S. Stoddard and C. E. Hummel of the Research Section of Hotpoint Co. They report significant extension of refrigerator shelf life with a gamma tray that delivers 5 r to the food it holds over a two-week period.*

Two kinds of tests were made. One was a comparison of storage times in terms of a set of quality standards ranging from initial quality to completely spoiled. With lettuce, celery, asparagus, strawberries, and tomatoes the satisfactory storage life in the gamma pan was 1.4–1.7 times that in the standard pan.

In a second series of tests, cultures of spoilage organisms from meat and lettuce were prepared and grown on gelatin in refrigerators in both standard and "gamma pans." Multiplication of the bacteria was observed, and the improvement factor attributable to the gamma irradiation ranged from 2 to 200.

Domestic refrigerator pans were made into gamma pans by containing a small amount of Co^{60} in an intermediate layer of porcelain enamel coating the inside of the pans. About 200 μc were required in each pan to provide a radiation level of about 15 mr/hr in the enclosed food-storage space.

Tests showed that dangerous radiation levels did not exist outside the refrigerator. This is easy to believe since at the exposure dose rate used a human would have to spend 20 hours a week in the irradiator to receive a tolerance dose. Thus there is no necessary conflict with safety specifications.

* E. S. Stoddard, C. E. Hummel, *Refrigerating Engineering*, **65**, No. 6, 33 (1957)

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Linear Accelerators as Radioisotope Producers

By MALCOLM H. MacGREGOR
Applied Radiation Corp.
Walnut Creek, California

Electron linear accelerators show promise for the manufacture of radioisotopes. They can be used as thermal-neutron sources for on-the-spot production of short-lived nuclides and as photon sources to produce nuclides through photonuclear reactions. Table 1 has been developed to evaluate the potential of production with photons. It shows activity levels that can be produced with 20- and 25-Mev accelerators operating at 10 kw.

Of the 84 nuclides listed, 58 cannot be made in a reactor by the n,γ process. Of the 26 that can be made in a reactor, 17 have half-lives of <3 days, so that on-the-spot production is advantageous. Only 14 of the listed nuclides are available in the current Oak Ridge radioisotope catalog.

Photon-activation analysis. Table 1 also suggests photons for activation analysis. This is especially significant in situations in which flux depression inside the sample and competing activities lead to trouble in neutron-activation analysis. Application of the reactions (γ,n), (γ,p), etc., from Table 1 can circumvent those difficulties. One illustration is the determination of the amount of sodium in aluminum. The $Al^{27}(n,\alpha)Na^{24}$ reaction masks the $Na^{23}(n,\gamma)Na^{24}$ activity when thermal neutrons are used. Photons, however, produce Na^{23} readily identified.

Photon Production of Nuclides

Generally electron-disintegration cross sections are about 100 times smaller than photodisintegration cross sections (*1*). Since electrons can be converted into photons with ~50% efficiency at energies of 20 Mev or higher, it is desirable to work with bremsstrahlung radiation. Figure 1 shows the bremsstrahlung dose rate in the forward direction as a function of electron energy when an optimum target is used (e.g., 30-mil gold).

Most photon isotope production is by

(Continued on p. 178)

TABLE 1—Isotope Production Rates with 10-kw Linear Accelerators

Radioisotope	Half-life	Irradiation time*	Activity produced: 20 Mev	Activity produced: 25 Mev	Accuracy†	Pile isotope available	Sample material‡	References
$_1T^3$	12.46y	1 h	0.1 μμc	20 μμc	1	yes§	He¶	*18*
$_6C^{11}$	20.4m	S	2 mc	80 mc	1	no	C	*4, 14, 21, 28, 30, 31, 55, 67*
$_7N^{13}$	9.93m	S	9 μc	40 μc	1	no	N_2¶	*12, 24, 47*
$_7N^{17}$	4.14s	S	0.1 μc	0.7 μc	1	no	O_2¶	*10, 59, 72*
$_8O^{15}$	118s	S	4 mc	30 mc	1	no	O_2¶	*5, 21, 24, 30, 47, 72*
$_9F^{17}$	70s	S	0	0.7 mc	1	no	LiF‖	*43*
$_9F^{18}$	112m	1 h	7 mc	15 mc	1	no	LiF‖	*22, 24, 39, 43, 74*
$_{10}Ne^{19}$	18.2s	S	10 μc	55 μc	1	no	Ne¶	*24*
$_{11}Na^{22}$	2.60y	1 h	2 μc	4 μc	1	no	Na	*30*
$_{11}Na^{24}$	15.1h	1 h	90 μc	470 μc	1	yes§	Mg	*49, 54, 58, 76*
$_{11}Na^{25}$	60s	S	1 mc	9 mc	1	no	Mg	*49, 76*
$_{12}Mg^{23}$	11.9s	S	10 mc	58 mc	1	no	Mg	*8, 15, 17, 30, 49, 76*
$_{13}Al^{26}$	6.5s	S	50 mc	130 mc	1	no	Al	*30, 31, 49, 75*
$_{13}Al^{28}$	2.27m	S	2 mc	9 mc	1	yes	Si	*76*
$_{13}Al^{29}$	6.56m	S	0.6 mc	5 mc	1	no	Si	*76*
$_{14}Si^{27}$	4.9s	S	15 mc	60 mc	1	no	Si	*17, 70, 76*
$_{15}P^{30}$	2.55m	S	60 mc	110 mc	1	no	P	*28, 30, 62, 67*
			0	2 mc	1	no	S	*62, 67*
$_{16}S^{31}$	3.2s	S	18 mc	70 mc	1	no	S	*17, 30, 68*
$_{17}Cl^{39}$	55.5m	S	60 μc	400 μc	1	no	A¶	*6, 53, 77*
$_{18}A^{39}$	265y	1 h	50 μμc	100 μμc	1	yes	A¶	*6, 24, 77*
$_{20}Ca^{39}$	1.06s	S	9 mc	40 mc	1	no	Ca	*17, 32, 70, 73*
$_{21}Sc^{47}$	3.43d	1 h	13 μc**		1	no	V	*27*
$_{23}V^{52}$	2.6m	S	2 mc	5 mc	1	yes	Cr	*73*
$_{24}Cr^{49}$	41.9m	S	3 mc	6 mc	1	no	Cr	*73*
$_{25}Mn^{54}$	310d	1 h	25 μc	35 μc	1	no	Mn	*28, 30*
$_{26}Fe^{52}$	8.9m	S	6 mc	16 mc	1	no	Fe	*30, 31, 45, 56, 67*
$_{26}Fe^{55}$	2.94y	1 h	4 μc	9 μc	1	yes§	Fe	*30, 31*
$_{27}Co^{57}$	270d	1 h	1.3 μc	5 μc	1	no	Ni	*51*
$_{27}Co^{58}$	72d	1 h	75 μc	150 μc	1	no§	Co	*28, 30*
$_{27}Co^{61}$	99m	1 h	100 μc	420 μc	1	no	Cu	*27, 46*
$_{28}Ni^{57}$	36h	1 h	1.4 mc	3 mc	1	no	Ni	*45, 56, 67, 73*
$_{29}Cu^{61}$	3.33h	1 h	0	1.4 mc	1	no	Cu	*19, 54*
$_{29}Cu^{62}$	10.1m	S	240 mc	240 mc	1	no	Cu	*19, 30, 31, 42, 50, 54, 67*
$_{29}Cu^{64}$	12.8h	1 h	7 mc	13 mc	1	yes§	Cu	*30, 50, 54, 67*
$_{30}Zn^{62}$	38.3m	S	110 mc	250 mc	1	no	Zn	*30, 56, 67*
$_{33}As^{73}$	76d	1 h	3 μc	24 μc	1	no	As	*30*
$_{33}As^{74}$	17.5d	1 h	400 μc	550 μc	1	no	As	*28, 30*
$_{33}As^{77}$	38h	1 h	0.7 μc	3.5 μc	1	no	Br	*27, 41*
			2 μc	3 μc	1	yes§	U	*13*
$_{35}Br^{78}$	6.4m	S	120 mc	160 mc	1	no	Br	*73*
$_{35}Br^{80}$	18m	S	90 mc	180 mc	1	yes	Br	*66, 69, 73*
$_{35}Br^{80m}$	4.6h	1 h	6 mc	11 mc	1	yes	Br	*66, 69*
$_{35}Br^{82}$	2.33h	1 h	1.7 μc	40 μc	1	no	Rb	*27, 46, 63, 67*
			210 μc	370 μc	1	yes	U	*13*
$_{37}Rb^{86}$	19.5d	1 h	140 μc	290 μc	1	yes§	Rb	*71*
$_{38}Sr^{85}$	65d	1 h	11 μc	18 μc	1	yes	Sr	*11, 64*
$_{38}Sr^{89}$	53d	1 h	5 μc	7.5 μc	1	yes§	U	*13*
$_{39}Y^{88}$	2.0h	1 h	7 mc	10 mc	1	no	Y	*11, 64*

TABLE 1—Isotope Production Rates with 10-kw Linear Accelerators (*Continued*)

Radio-isotope	Half-life	Irradiation time*	Activity produced: 20 Mev	Activity produced: 25 Mev	Accuracy†	Pile isotope available	Sample material‡	References
$_{40}Zr^{89}$	79.3h	1 h	2 mc	4 mc	1	no	Zr	*3, 15, 64, 71*
$_{40}Zr^{89m}$	4.4m	S	210 mc	400 mc	1	no	Zr	*3, 15, 64, 71*
$_{40}Zr^{97}$	17h	1 h	470 μc	730 μc	1	yes	U	*13*
$_{41}Nb^{92}$	21.6h	1 h	11 mc	17 mc	1	no	Nb	*28, 30*
$_{41}Nb^{97}$	72m	1 h	1 mc	10 mc	3	no	Mo	*57*
$_{41}Nb^{99}$	2.5m	S	200 μc	2 mc	1	no	Mo	*29*
$_{42}Mo^{91}$	75s	S	4 mc	8 mc	1	no	Mo	*29, 30, 31, 54, 71*
$_{42}Mo^{91m}$	15.5m	S	21 mc	40 mc	1	no	Mo	*29, 30, 31, 54, 71*
$_{42}Mo^{99}$	67h	1 h	600 μc	800 μc	1	yes	Mo	*29*
			100 μc	170 μc	1	yes§	U	*13*
$_{44}Ru^{103}$	39.8d	1 h	4 μc	7 μc	1	yes§	U	*13*
$_{44}Ru^{105}$	4.5h	1 h	550 μc	1 mc	1	yes	U	*13*
$_{45}Rh^{102}$	210d	1 h	50 μc	75 μc	1	no	Rh	*28*
$_{45}Rh^{105}$	36.5h	1 h	0.04 μc**		1	no	Ag	*27*
$_{47}Ag^{105}$	40d	1 h	4 μc	20 μc	3	no	Ag	*30*
$_{47}Ag^{106}$	24m	S	200 mc	300 mc	1	no	Ag	*30, 31*
$_{47}Ag^{108}$	2.3m	S	200 mc	300 mc	1	yes	Ag	*30, 31*
$_{47}Ag^{111}$	7.6d	1 h	2 μc	4 μc	1	yes§	U	*13, 57*
$_{47}Ag^{112}$	3.2h	1 h	0.2 mc	2 mc	3	no	Cd	*57*
$_{49}In^{113m}$	104m	1 h	22 mc	55 mc	1	no	In	*34*
$_{49}In^{114}$	72s	S	100 mc	140 mc	1	yes§	In	*30, 34*
$_{49}In^{114m}$	49d	1 h	370 μc	550 μc	1	yes§	In	*30, 34*
$_{49}In^{115m}$	4.5h	1 h	350 μc	450 μc	1	no	In	*9, 34*
$_{49}In^{117}$	2.5h	1 h	100 μc	1 mc	3	no	Sn	*57*
$_{51}Sb^{120}$	16.4m	S	240 mc	300 mc	2	no	Sb	*30, 44, 67*
$_{51}Sb^{122}$	2.8d	1 h	3 mc	4 mc	1	yes§	Sb	*30, 44, 67*
$_{53}I^{126}$	13.0d	1 h	800 μc	1.1 mc	1	no	I	*28, 30*
$_{55}Cs^{128}$	33m	S	10 mc	18 mc	1	yes	U	*13*
$_{56}Ba^{139}$	85m	1 h	3.5 mc	6 mc	1	yes	U	*13*
$_{58}Ce^{142}$	33h	1 h	180 μc	300 μc	1	yes	U	*13*
$_{73}Ta^{179}$	600d	1 h	0.8 μc	4 μc	1	no	Ta	*35, 36, 40, 44, 73*
$_{73}Ta^{180}$	8.15h	1 h	40 mc	60 mc	1	no	Ta	*28, 31, 35, 36, 40, 44, 46, 67, 73*
$_{79}Au^{195}$	180d	1 h	4 μc	7 μc	3	no	Au	*7, 30*
$_{79}Au^{196}$	5.55d	1 h	2 mc	3 mc	2	no	Au	*7, 28, 30*
$_{79}Au^{197m}$	7.4s	S	3 mc	4 mc	2	no	Au	*7*
$_{81}Tl^{207}$	4.8m	S	400 μc**		1	no	Pb	*16, 52*
$_{83}Bi^{207}$	50y	1 h	0.03 μc	0.1 μc	1	no	Bi	*40*
$_{90}Th^{231}$	25.64h	1 h	13 mc	22 mc	1	no	Th	*1*
$_{92}U^{237}$	6.75d	1 h	2 mc	3 mc	1	no	U	*1, 28, 31, 38*

* Either 1 hour (1 h) or else to saturation (S). † 1 = ±50%, 2 = within factor of 3, 3 = within factor of 10. ‡ 1 gm of natural element unless otherwise noted. Target 3 in. from accelerator. § Listed in Oak Ridge radioisotope catalog, Jan., 1957. ¶ 1 cm³ at STP. ‖ 1-gm sample. ** Measurement at 23 Mev.

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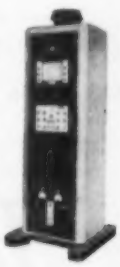

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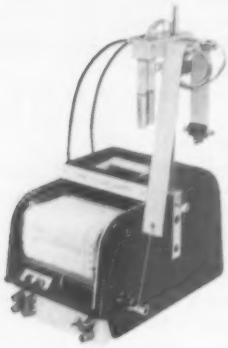

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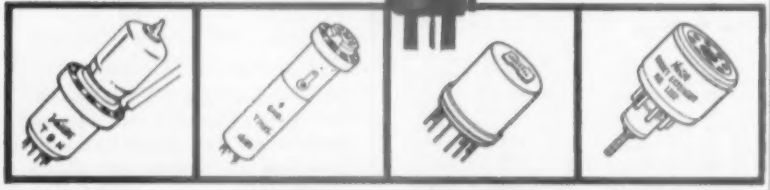

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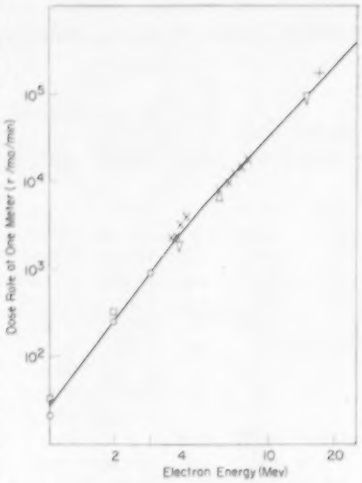

FIG. 1. Axial photon intensity 1 meter from optimal converter. Data are from: X, C. W. Miller, Metropolitan Vickers Gazette, December, 1953; □, High Voltage Engineering Corp., Data Sheet, May, 1956; 0, Goldie *et al.*, ASTM Bulletin No. 201, October, 1954; Δ, Stanford University, unpublished; ∇, Phillips Electrical, Ltd., "The Traveling Wave Linear Accelerator for Radiation Therapy and Nuclear Research"; +, calculated from *Phys. Rev.* 83, 959 (1951), NBS Handbook 55, p. 33, and AERE-G/R-786

γ,n reactions. A typical γ,n cross section (*2*), showing the familiar "giant resonance," is shown in Fig. 2. Figure 3 illustrates the systematic variation of thresholds and cross-section maxima with mass number (*2*). From Fig. 3 we see that an electron accelerator for isotope production should have an energy >15 Mev. However, Fig. 2 indicates that production rates do not increase much above 25 Mev.

Calculations

In the calculations for Table 1 electron energies of 20 and 25 Mev were chosen. A power level of 10 kw and a tungsten converter were assumed in each case. These energies and power ratings are well within the range of present-day linacs. Isotopes with half-lives of $1–10^{10}$ seconds were considered. For uniformity most calculations are for a 1-gm sample of the natural element 3 in. in front of the photon-producing converter. Higher specific activities can be had by moving the sample closer to the converter, and higher total activities by using a thick wedge of material instead of just a 1-gm sample. In the case of Na^{22} production, for example, a large sample would give an increase in total activity by a factor of ~30.

Dose rates. From Fig. 1 the forward

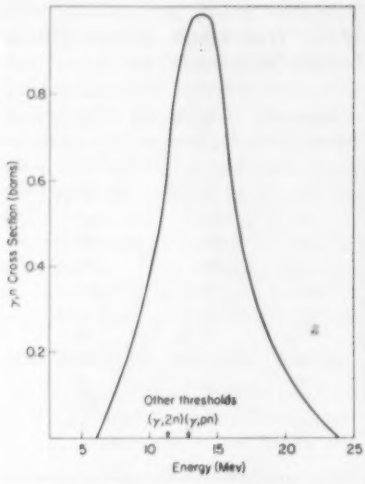

FIG. 2. Typical (γ,n) cross section shows giant resonance with peak near 15 Mev

photon dose rates for 20- and 25-Mev electron linacs operated at 10 kw are 10^5 and 1.5×10^5 r/min at 1 meter, respectively, with an accuracy of about $\pm 25\%$. Thus at 3 in. the dose rates are 1.7×10^7 and 2.6×10^7 r/min. If the sample has a total weight of 1 gm and a thickness facing the accelerator of 4 gm/cm², it will subtend a half-angle of about 2 deg at the converter. The average dose rate at the top surface of the sample will be ~90% of the forward dose rate (*3*). The average axial dose rate in the sample, assuming an absorption coefficient of 0.05 cm²/gm for all elements (*4*), is also ~90%. Hence the average dose in the sample is ~80% of the peak surface dose, giving dose rates of 1.4 and 2.1×10^7 r/min.

To work with monoenergetic cross sections, the bremsstrahlung spectrum must be separated into its energy components. The procedure is to take the relative bremsstrahlung spectrum at a particular energy (*5*), convert photon intensity into roentgens (*6*), normalize to the actual dose rates and then convert back into photon flux. The results are presented in Table 2.

Activation rate. The photon flux multiplied by the cross section for the isotope under consideration gives the number of activations per second. For half-lives shorter than 1 hr we have assumed irradiation to saturation. For longer half-lives irradiation for 1 hr was assumed, and activities are quoted as of shutdown time.

In general, errors are assumed to be $\pm 50\%$, although in some cases they may turn out to be larger than this as better data become available. Where

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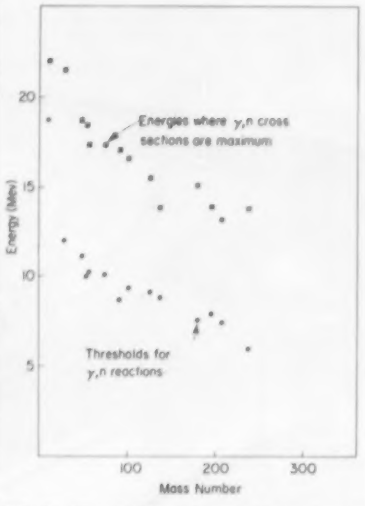

FIG. 3. Thresholds and cross-section peaks for (γ,n) reactions as function of mass number show that best photon energies for radionuclide production are 15–25 Mev

larger errors are indicated, an extrapolation of data is involved.

Discussion

Table 1 shows that the 25-Mev electron linac is more efficient in producing isotopes than the 20-Mev accelerator, although not radically so in most cases. A comparison with cyclotron isotope production rates (7) shows that the electron-linac rates are in general an order of magnitude smaller, although in some cases they are 10 times as large. Considerations of target design and, for short half-lives, proximity to the accelerator serve to put the electron linac on a competitive basis.

Some of the nuclides listed seem especially interesting at the present time:

F^{18} is an important isotope for dental studies (8).

Na^{22}. The University of Birmingham, England, produces about 40 mc of Na^{22} per year with its 60-in. cyclotron.

TABLE 2—Average Gamma Flux in Sample (*photons/cm²/sec*)

Gamma energy (Mev)	*20 Mev at 10 kw*	*25 Mev at 10 kw*
2	57×10^{12}	71×10^{12}
4	26	33
6	16	20
8	11	14
10	8.1	11
12	6.3	8.3
14	5.0	6.8
16	3.9	5.6
18	2.7	4.7
20	0.3	03.9
22		3.1
24		1.8

Fe^{53}. Tool-wear studies have in general relied on activities produced in the trace elements, since the $Fe^{58}(n,\gamma)Fe^{59}$ reaction requires days or weeks of reactor irradiation time to produce usable activities (9). The Fe^{53} half-life is long enough for the typical wear measurements, which last only a few seconds; it is short enough that tools can be repeatedly activated and tested, and there are no disposal problems.

Ni^{57}. Where longer half-lives are desired for wear studies, Ni^{57} looks especially promising.

I^{126} has properties well suited for medical work.

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Foods, Plastics Dominate Electron-Beam Symposium

Radiation will probably pay its first significant dividends in processing plastics and preserving food judging from the talks delivered recently at the General Electric X-ray Department's Third Biennial Electron Beam Symposium in Milwaukee. Seven papers were devoted to the economics, measurement, and application techniques of electron beams. In addition three experts in the field of radiation processing discussed their specialties. R. B. Mesrobian spoke on polymer synthesis and modification. His talk included

the prediction that radiation-produced plastics of the future will include fabrics that will discharge static.

Speaking on hydrocarbon irradiation R. L. Rogers described experiments in which gaseous butane and isobutylene were liquified by irradiation. Polymerization of isobutylene to polyisobutylene, he pointed out, is a low-cost process since radiation merely initiates the reaction. G. E. Danald described in detail the country's current efforts in preservation of foods by irradiation.

Accelerator vs. Isotopic Sources

Resonant transformers provide vastly cheaper radiation than Cs^{137} sources according to a cost study presented by L. G. Cook of G. E.'s Project Analysis Section in Schenectady. He emphasized that technical and accounting problems involved in economic estimates are so complex as to make comparisons difficult. Radiation costs are more sensitive to economic assumptions than to type of source.

Assuming continuous operation he finds that radiation can be delivered to a product at \$14/kwh by a 240,000-curie Cs^{137} source and \$1/kwh by a resonant transformer. He assumes a cost of \$1/curie for Cs^{137}, 10-year amortization of invested capital and 30% return on average investment. Operating costs are estimated at \$500/initial kw of Cs^{137}, and for the transformer an annual \$2,000/kw is allowed for auxiliary equipment and operating costs. For both sources it is assumed that 50% of the radiation is delivered to the product.

The resulting cost figures are:

	Radiation costs (\$/initial kw)	
Item	Cs^{137}	*Resonant transformer*
Purchase	240,000	10,000
Capital recovery (\$/yr based on 10-year amortization)	24,000	1,000
Earnings required by invested capital (\$/yr)	36,000	1,500
Operating costs* (\$/yr)	500	2,000
Resulting cost of radiation (\$/kwh absorbed)		
Continuous use	14	1
2,000 hr/yr	60	3

* Includes auxiliary equipment and maintenance.

In discussing his cost figures Cook recognized that a 10-yr amortization

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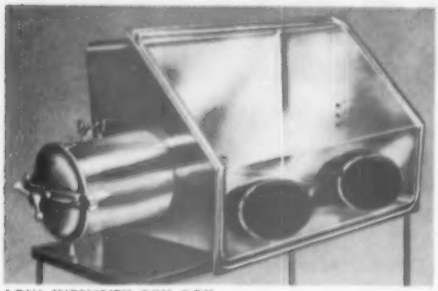

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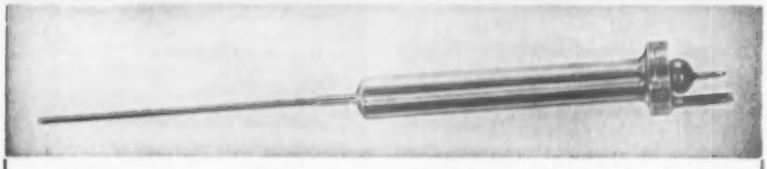

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period may be too short for Cs^{137} in view of its 30-yr half-life. A 30-yr amortization would reduce the radiation cost from cesium by 20%. For transformers 10 years may be too long—G. E.'s J. W. Ranftl has used a 5-yr amortization period.*

Electron-Beam Calorimetry

Two newly developed calorimetric devices provide absolute measurements of electron-beam doses. They were described at the symposium by S. I. Taimuty of the Stanford Research Institute. Development has been under his direction as part of contracts with the Army's Quartermaster Corps and Wright Air Development Center. One calorimeter has a solid aluminum element to absorb the energy of the beam, and the other uses a small volume of liquid.

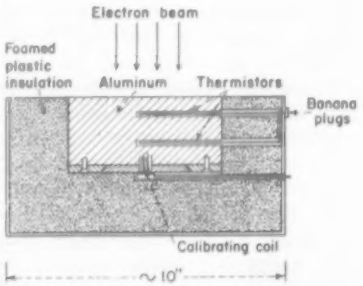

FIG. 1. SOLID-ABSORBER CALORIMETER has aluminum cylinder to absorb electron beam and thermistors to measure temperature rise. Heating coil provides heat for calibration

Figure 1 shows the solid aluminum calorimeter. Thermistors are used as the sensitive elements, and a heating coil provides a means of calibration. The beam absorber is an aluminum cylinder that is thermally insulated on all sides except where the electron beam enters. The system is designed for 8-Mev electrons. To eliminate radiation damage, the sensing thermistors are located deep enough in the aluminum that the electrons can not reach them.

Taimuty uses a method of compensated loss with his calorimeters. Rather than prevent heat leakage, he observes the rate of temperature gain or loss before and after irradiation and corrects accordingly. Other correc-

* J. W. Ranftl. Sterilization by radiation (Fall meeting American Drug Manufacturers Assoc., Production and Engineering Section, Oct. 19, 1956, Boston, Mass.)

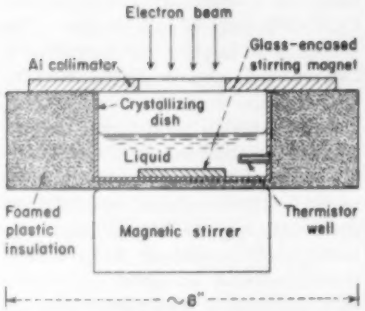

FIG. 2. LIQUID-ABSORBER CALORIMETER has 150 ml of liquid in Pyrex dish. Thermistor in reentrant well measures temperature. Magnetic stirrer keeps liquid in motion

tions allow for electron backscattering (8% at 1 Mev and less at higher energies) and bremsstrahlung (1–8%).

A transmission method that makes the calorimeter the sensing element in an electron-beam thickness gage permits measurement of energy absorption in a sample. The difference between the energy delivered to the calorimeter with the sample in the beam and without it is the energy delivered to the sample. For accuracy the sample is made to absorb about half of the beam energy. The method has been applied in calibrating a cellophane-film dosimeter.

A liquid-absorber calorimeter is shown in Fig. 2. 150 ml of solution are contained in a Pyrex crystallizing dish and stirred during irradiation by a magnetic stirrer. A thermistor is installed in a re-entrant well of the dish. Two methods of calibration are used: a heating coil like the one in the solid-absorber calorimeter and a second method in which the heat of neutralization of known amounts of base and acid is measured with the thermistor. This calorimeter is intended for use with a 1-Mev resonant transformer and has been used in calibrating a ceric-sulfate dosimeter.

Food Irradiation

Real promise is evident in the field of radiation-preservation of foods according to George Danald of the Quartermaster Food and Container Institute in Chicago. In the past few years the program has doubled its number of co-operating contractors to ~100, doubled its budget to $2-million/yr, and increased its annual output of irradiated food from a few tons to about 200 tons.

Danald discussed briefly the Army's food-irradiation center that is sched-

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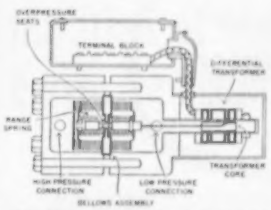

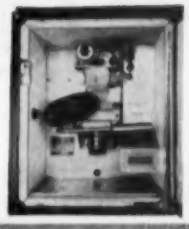

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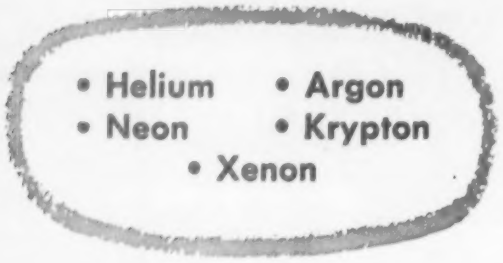

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uled for construction at Stockton, Calif. (NU, July '57, pp. 76, 80). This center will have a food-irradiation reactor and also a linear electron accelerator.

In addition to studies on preservation of food and possible side effects on flavor and nutrient value, the program includes investigations in radiation dosimetry, food packaging and microbiology. The number of irradiated foods has been increased to provide meal assemblies. Some have been fed to high government officials and others as a 12-week 100% diet to human volunteers.

Foods. Three foods are called most promising at present: bacon, green beans and peaches, which have been stored for a year at 72° F after irradiation. Others under study are pork, chicken, lamb, beef liver, oysters, shrimp, halibut, codfish cakes, white and sweet potatoes, carrots, cabbage, lemons, oranges and pears. Insect deinfestation is under study in such foods as dried fruit, flour, and cereals.

Most meats remain palatable at doses of 2×10^6 rads, although off-normal odors and flavors are sometimes a problem. On the other hand, fresh vegetables are seriously impaired at doses of 300,000–500,000 rads. Because the chemical changes required for discoloration and similar damage are infinitesimal, detailed studies of these changes are under way. Microbiology, infrared spectrophotometry, and vapor-phase chromatography are being used to find out just how much radiation is required for preservation, how the amount can be reduced by adding heat and antibiotics, and what chemical changes are induced in radiation processing.

Feeding studies. There are several distinct steps in the progress of an irradiated food item from irradiation to acceptance as a dining-room ingredient. First is the study of radiation effects on shelf life, molds, bacteria, etc. Then come feeding studies with animals. If these are satisfactory, the Army's surgeon general may clear the food for human testing. Human testing includes evaluation of palatability as well as detailed determination of nutritional values.

Currently more than 100 items have been cleared for taste testing. Meanwhile two-year animal feeding studies continue with 21 foods as a means of establishing their complete safety. These studies are concentrated toward specific effects of irradiation, fertility

in the animals and possible alteration of biological values in the foods.

Radiation sources. Eleven major sources of electrons, X-rays, and gamma photons are now being used by the Quartermaster Corps and its contractors. Electron sources include G. E.'s 2-Mev resonant transformer at Milwaukee, service irradiation facilities of High Voltage Engineering Corp. and Applied Radiation Corp. (NU, Oct. '57, p. 126), the Argonne Cancer Research Hospital's 50-Mev linear accelerator and a 30-Mev linear accelerator at Michael Reese Hospital in Chicago. Spent-fuel gammas are in use at the Materials Testing Reactor, Dugway Proving Ground in Utah and at Argonne National Laboratory. Co^{60} sources are used at Stanford Research Institute, Battelle Memorial Institute, and at Dugway. Soft X-rays are in use at Battelle.

Dosimetry. The difficult problem of food dosimetry is under study by several groups functioning in close cooperation. These include a National Research Council subcommittee, the National Bureau of Standards, a committee of the Aircraft Nuclear Propulsion group and several committees of the American Society for Testing Materials. In a special research project directed toward selection of food dosimeters Stanford Research Institute is about to select certain systems for final development. Systems currently in use in the program include ferrous sulfate, ferrous cupric sulfate, calorimeters, ionization chambers, glasses, photographic emulsions and miscellaneous other materials.

Packaging. Tin cans have proved to be acceptable containers for irradiated foods but attention has to be given to the compounds used to seal the tops and bottoms on the cans and to the enamel used to line them. Elastomers that suffer breakage of their polymer chains, such as butyl rubber, are unsatisfactory sealing compounds, but other common sealants are all right. Oleoresinous enamels are usable with nonfatty foods, and phenolic types are usable with fatty foods.

Suitable flexible packages include plastic and plastic–aluminum-foil ones. Most existing containers are satisfactory at doses $<10^6$ rad. At higher doses there are problems of odors generated in the package material, deterioration of the package through the action of food ingredients and penetration of microorganisms through the package wall.

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Continued from p. 77

gram reflecting our felt needs, has progressed from weapons, to naval propulsion, to power. Considering only our national power needs, present and projected, an extensive program of construction of large-scale power reactors in this country is not desirable.

The development of economic atomic power is slow because of the newness of the art, the long-time cycle from idea to operating reactors, the lack of experience with the operation of any type of atomic power reactor over a sufficient period of time, and the numerous technological problems still unsolved. Moreover, the development and capital cost of atomic power reactors is so high that the kilowatt hour cost of power produced by such reactors can not now compete on an economic basis in the United States with that of conventional power plants. Again, consideration of the national power needs alone does not require concentration of available resources upon the perfection of atomic power reactors.

Nevertheless long-range estimates of eventual energy demands in the United States together with appreciation of the potentialities of atomic power require the United States to proceed with research in and experimentation with what appear to be promising types of reactors as well as with a vigorous nuclear research program. There should be concentration on technological development and the achievement of *methods* for bringing about economic nuclear power.

In the course of this technological development the general need for improved education and training is sharply emphasized. Advances in education and training in this particular field are necessary to the recruitment of adequate personnel. Attention should also be paid to securing a more adequate flow of information which can be achieved without danger to the national security.

The cost of the requisite technological development must be appropriately shared. In conventional power generally the power industry indirectly absorbs a share through the cost of purchased equipment; the manufacturing industries make direct expenditures on research and development. In the case of atomic power the conditions are different and the conventional pattern does not apply. The primary applications of atomic energy were to weapons and were entirely controlled and financed by government. As attention was turned to a general atomic energy program, the MacMahon Act of 1946 still provided for a government monopoly. This was no longer necessary or appropriate when attention was directed to the development of atomic power. This fact was recognized by the relaxations registered in the Atomic Energy Act of 1954, which had as its objective the acceleration of the development of commercial atomic power by authorizing a program of development by private industry to supplement an enlarged program to be conducted by the government. Nevertheless, the problem of the appropriate distribution of effort and cost between government and private enterprise has not yet been satisfactorily solved.

The distribution of functions—public vs. private. It is impossible wholly to escape the impact of the controversy over the relative roles of public and private enterprise in regard to power. Opinions differ as to whether this controversy has hindered the development of atomic power, but there is no doubt that it is still an important political issue. Given the unique problems involved in the development of economic atomic power, it is clear that

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government must continue to play a large role. In view of the time factor involved, private industry cannot alone absorb the cost of research, experimentation, and construction of atomic power plants. Government financial support is necessary in the atomic power program. The necessary assistance may be supplied directly by government or by government supported research and development and through the supply of nuclear fuels and other materials and services priced with avowed reference to the necessity for government support. If such essential support would conflict with existing legislative restrictions on subsidies, the law should be amended. On the other hand a minority urges that subsidies in any significant amounts should not be provided but that the government itself should construct atomic power plants both large and small for demonstration purposes.

In the present pattern, there are four types of atomic power projects in the United States. On the one hand are the completely government owned and operated facilities. On the other hand are facilities privately constructed, owned and operated, but also subject to government controls and purchasing from the government their nuclear fuels. In between are two types of hybrids. In one type the federal government retains title to a facility to the cost of whose construction or operation—or both—others contribute. In the second type, private industry has title as licensee but receives assistance from the government.

The dependence of private industry upon government assistance in atomic power development is inescapable. In such a situation there will remain for a considerable time the problem of finding a formula for equitable distribution of costs between the stockholder, the consumer, and the taxpayer. No conclusive solution of this problem has been found, but it would not be in the public interest to allow the atomic energy program to be retarded by disagreements over this issue. The injection of the public-private dispute into the atomic field at this time is unnecessary and unfortunate. During the period of the next years when the best that can be expected is an economic demonstration project, public and private power agencies have a common, not a conflicting, interest in the program. A truce is possible on terms which will not prejudice the respective roles of private and public

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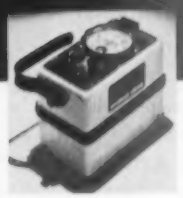

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power groups and which will not inhibit either group in its stand on the broad principle of the proper roles of government and industry in a democratic society. The necessary government assistance should be available to both private and publicly owned power agencies without discrimination.

Accurate forecasts of the cost of nuclear power cannot be made until plants have been in operation for at least four or five years, since at present there is inadequate experience in the construction, operation and life of reactors and their components including fuel. Proceeding on an experimental basis with prototypes which might range from one to fifty thousand kilowatt capacity, the development of improved types of nuclear power reactors can provide useful experience, thus avoiding the very large cost of constructing power-producing plants designed for maximum power production. Another view is that the necessary engineering and technological experience can be gained only through the actual operation of large-scale reactors.

Private industry has already ventured capital in the construction of a few such large plants and will continue to do so if more economic motivation than now exists is made available. At present this is not to be expected, particularly in the light of an anticipated early technological obsolescence of any plant which may now be constructed. Such construction therefore will be dependent upon government financial support.

The international perspective. Decisions on the type and size and schedule of construction of reactors cannot be made solely with an eye to national power needs in the United States and must be influenced by considerations of an international character.

When the United States atomic power program is viewed in the perspective of the international situation and of our foreign policy, a variety of new elements are introduced into the picture. A final view cannot ignore their intimate interrelation.

The demand for the rapid development of atomic power is urgently felt in various foreign countries. In the United Kingdom the requirement for energy is far outstripping coal production. Anticipated increases in coal production through large investment of funds in modernization of the mines will fail to fill the gap; it can be filled only by other sources of energy—oil or atomic energy. Increased imports of oil constitute an unacceptable strain upon Britain's international balance of payments. Moreover, recent developments in the Middle East have brought home the dangers of too great a reliance upon oil from that area. The result has been the adoption of a policy of rapid construction of large-scale power plants initially of the Calder Hall type which is in operation.

In Western Europe comparable needs for increased power resources have been exemplified by the creation of Euratom, which is expected to begin functioning by the first of the year and to encourage the construction of atomic power plants as rapidly as possible. In the Soviet Union there is an active reactor development and construction program. Among the other heavily industrialized countries, similar steps are planned in Japan. Even in the less industrialized areas, for example, in Latin America and in the under-developed countries of Asia as well as in the Middle East, atomic studies are under way.

The industrialized countries. The great international significance attached to President Eisenhower's Atoms for Peace speech to the United Nations in December 1953 gave the United States a moral and psychological lead. It paved the way for the Geneva Conference and opened up new areas for international cooperation. The United States, taking into account the present attitudes of prospective purchasers, should move with vigor to take full advantage of that lead in countries which are prepared to proceed, or which insist upon proceeding forthwith to the installation and operation of atomic power plants. From the standpoint of meeting the challenge and the opportunity created by these rising foreign demands, the United States cannot be complacent.

In the United Kingdom a national power need did contribute the vitality and sense of direction necessary to the active implementation of an atomic power program. The new vital thrust which the creation of Euratom may well supply can afford that direction and impetus to a United States atomic power program which has hitherto been lacking because national power needs did not afford a motivation for supplying them.

Euratom's target has been set in the planning stage at 15 million kilowatts of atomic power within a decade, and more to follow. Experience and progress in the next few years will proba-

bly determine whether this goal can be reached. They recognize a need for a rapid beginning toward a kilowatt schedule and for concentrated engineering experience to provide a future. Euratom may therefore be taken as a symbol of potential foreign markets, whether they open up in the immediate or in the more distant future.

In getting started, Euratom may turn in part to tested reactor designs, such as the improved Calder Hall reactor. It is also looking to America with the belief that American participation could be a critical factor in launching and developing its program. The diversified program in the United States is a promising basis for extensive participation and support. The participation of American capital, enterprise and technological skills in European developments should be encouraged along the lines of existing joint ventures.

A major effort on the part of American industry and government would provide the American atomic power program with vitality and purpose and accelerate the development of power at home. While it can be expected that highly industrialized countries such as those in Europe will ultimately establish their own facilities for building their atomic power plants, Euratom can provide American industry with experience as well as a market for its products and technology. Such an effort would assist the aims of American foreign policy in developing the economic strength of, and American ties with, the Western European community, and would assist in the establishment of an integrated Western Europe. It would provide experience in the operation of large-scale reactors of great and immediate benefit to our own development program.

The implementing of such an effort will raise many questions of governmental organization and machinery to facilitate and support the undertaking and may well require legislation. It will heighten the importance of removing obstacles to industrial participation abroad. What is more important at the moment, however, is the establishment and declaration of purpose. There is considerable urgency for action now, if the opportunity for such participation is to be siezed.

There is an additional line of action which would serve United States foreign policy objectives and also contribute to the development program in the United States; the proposal sug-

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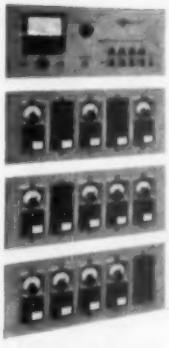

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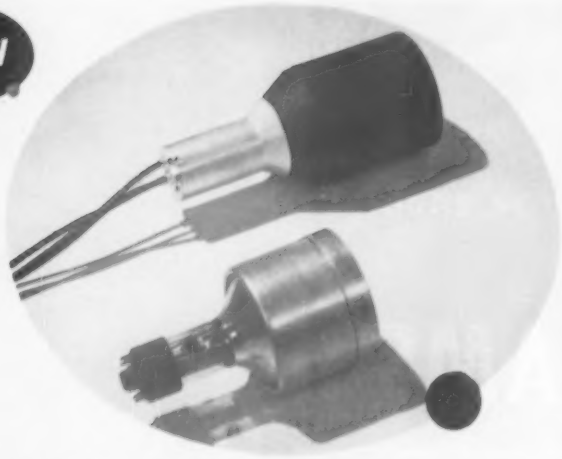

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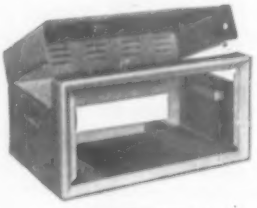

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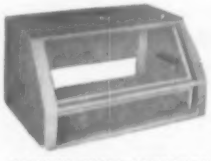

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gested above would exploit principally the present technology. This second line of action, not inconsistent with the proposal just described, is for the United States government and industry to proceed vigorously in developing prototypes for reactor types most suited to paving the way for large-scale reactors to be built in other countries to fulfill economically the more immediate power needs abroad. This approach should not exclude a modest further cooperative government–industry program to build large-scale demonstration reactors in the United States.

The less industrialized countries. In so far as the less industrialized countries are concerned, it is necessary to distinguish between those which have progressed to various stages of industrialization and those which still must start from scratch. While power is an indispensable element in an industrial economy, it is only one element and not the most important in the complex. Its development and use must be timed in relation to the development of the need for power as well as the requisite training and skills in the utilization of power facilities. In some countries, primary emphasis should be laid on nonpower uses of atomic energy. While the United States may suggest these considerations to the governments concerned, we should recognize that the final appraisal must be their own.

The International Atomic Energy Agency. The United States wisely took an initiative that led to the establishment of the International Atomic Energy Agency. The Agency has an important role to play in fostering cooperation on a worldwide basis and in assisting the atomic development of less industrialized nations. Avoiding excessive preoccupation with organizational detail, the United States should take an active part in achieving these objectives and in advancing the Agency's important functions with respect to international controls and safeguards. The relationships between the Agency's program and the bilateral programs that the United States has developed should now be reviewed.

The need for federal leadership. There is urgent need for a thorough review of the United States atomic power program. Such a review should lead to a clear formulation of the program's objectives in terms of the national power needs of the United States in the long run as well as the

immediate requirements of United States foreign policy. Prior policies were adopted in the light of considerations thought valid at the time of their adoption. The relevant factors have changed; policies and programs must be changed to meet them. Since various interests in the United States, including industry and labor, must participate in the implementation of the program, the objectives must be clearly stated and widely publicized in order that they may be widely understood, not only by those directly interested but also by the public at large.

In recommendations which were taken into account in the drafting of the Atomic Energy Act of 1954, it was hoped that private industry could assume a more substantial role in the development of atomic power reactors. In the light of what has been learned since that time about the technical complexity and the cost of the program and the greater need for international actions, it is now apparent that at this time there is a larger need for government support and leadership. The desired rate of progress calls for the AEC to assume more positive leadership and direction. In the light of newly defined objectives, the Commission should promptly prepare and disseminate a more carefully coordinated and scheduled program for both governmental and non-governmental activity. It should provide the financial support needed to make possible such private as well as governmental activity. To this end, the AEC should take steps to strengthen its internal administration of the program, with primary emphasis on positive accomplishment of its objectives in the power field.

Opinions differ on the most desirable means by which the Commission should achieve these results. One line of thought favors the establishment of a broadly constituted advisory group to help in the framing of the program. The necessity of securing the cooperation of the Joint Congressional Committee is obvious. It is thought by some that implementation of the program, when formulated, can best be secured through Presidential action based on the advice of the National Security Council.

There is unanimous agreement on the point that the policy and program when adopted should be supported at the highest government level.

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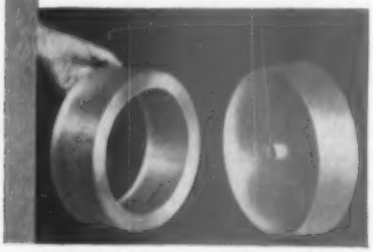

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PRODUCTS AND MATERIALS

Pulse-Height Analyzer ➡

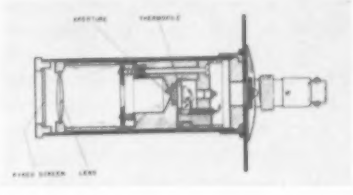
Model PA-100 (right) is a hundred channel pulse-height analyzer that utilizes delay time storage principle as the memory element. Analyzer has a capacity of 10 counts in each of its 100 channels. Counting is done on a binary digit system, with the counts in each channel printed on a tape along with channel identification number.—Technical Measurement Corp., 140 State St., New Haven 11, Conn.

Neutron Survey Meter

Model E-2 (above), a portable transistorized monitor for fast-neutron surveys, is designed for health hazard work. Response range is 0.2–10 Mev. Gamma background is effectively eliminated by discriminating counting rate circuit.—NRD Instrument Co., St. Louis 19, Mo.

Melting Furnace

Model 2703 is a vacuum-arc type skull melting furnace for laboratory and process development. Furnace can melt reactive metals. It has a pouring capacity of 8 lb of titanium or 14 lb of steel.—NRC Equipment Corp., 160 Charlemont St., Newton Highlands 61, Mass.



Pyrometer

Land radiation pyrometer measures radiant energy focused on small thermopile. Only 2 sec are required to attain 98% of full reading with normal model; special thermopile gives 98% full reading in 0.6 sec. Several models are available for ranges between 1,000° F and 3,300° F.—Robertshaw-Fulton Controls Co., 2920 N. Fourth St., Philadelphia 33, Pa.

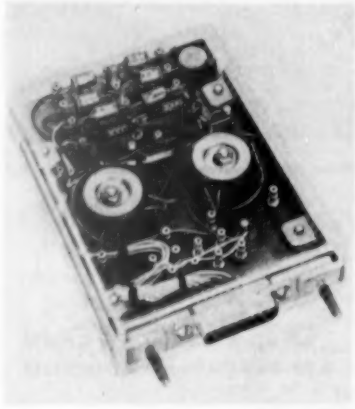
Differential Analyzer

Model 695, single-channel analyzer, is designed for use in scintillation spectrometry and proportional counting. Signal input is 0–100 volts positive.

Window width constant to 1% for all settings of lower discriminator.—Victoreen Instrument Co., 5806 Hough Ave., Cleveland 3, Ohio.

Personnel Monitor

GARD (above) unit utilizes γ-sensitive CSI(Tl) crystals that glow in response to γ radiation. Readout is by visual gaging of intensity.—Sargent-Rayment Co., 4926 East 12 St., Oakland, Calif.



Magnetic Amplifier

Miniaturized, high-performance magnetic amplifier (above) is designed for use in critical applications. It operates at a supply frequency of 5,000 cps or 3,600 cps. Amplifier is suitable for controlling low-power output devices such as hydraulic servo valves.—Magnetic Amplifiers, Inc., El Segundo, Calif.

Pulse Generator

Model B-5, pulse generator, gives an unparalled combination of extremely narrow pulse widths, fast repetition rates and fast rise times. Repetition rate is 10 mc; pulse widths is 0.2–12.5 mc; rise time is 8 mμ sec.—Rutherford Electronics, 8944 Lindblade St., Culver City, Calif.

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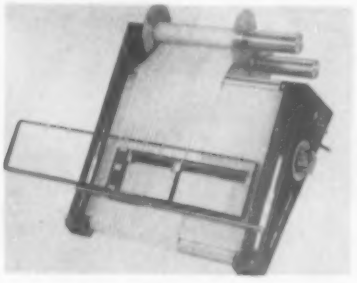
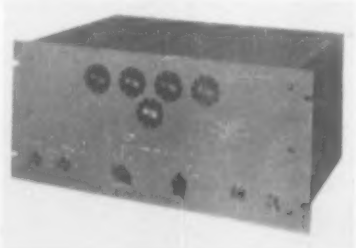
Survey Meter

Model 20,804, a transistorized fast-slow neutron survey meter (above) is insensitive to γ rays <100 r/hr. Fast neutrons with energies between 0.1 and 15 mev are detected by a proton-recoil detector; slow neutrons with energies <0.1 ev by an enriched BF_3 filled proportional counter.—Radiation Counter Laboratories, Inc., Nucleonic Park, Skokie, Ill.



Oscillogram Reader

Model R-1 (above) is a variable speed, back-lighted oscillogram reader and scanner. Its advantage lies in combining scanner with a built-in reading head capable of reading amplitudes of any number of channels. Unit corrects each channel for reference line position as well as reference line drift. Takes film widths from 0 to 16 in.—Gerber Scientific Instrument Co., 162 State St., Hartford 3, Conn.



Electronic Timer

Model ET-1 (above) uses glow-transfer tubes to produce preset time intervals of 0.01, 0.1, 1, 10 or 100 min and

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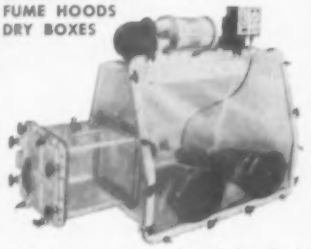

Illustrated Unit Model 8 includes: Basic hood; *Nation-wide design contest winner* square air lock #22, with positive seal aluminum doors, neoprene "O" ring gasketing, *patent pending* dehumidifier #52 recirculates air through box and dessicant to absorb humidity. After saturation indicating dessicant changes from blue to pink, a half turn of the cylinder brings a dry dessicant chamber in line with recirculating air, while saturated dessicant may be simultaneously regenerated.

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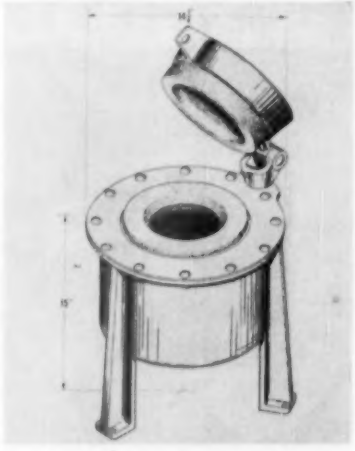
multiples from 1 to 10. Accuracy is $\frac{1}{60}$ sec. Typical use is with automatic sample changing equipment to control counting time, readout, and sample changing.—Tullamore Electronics Laboratory, 6055 S. Ashland Ave., Chicago 36, Ill.

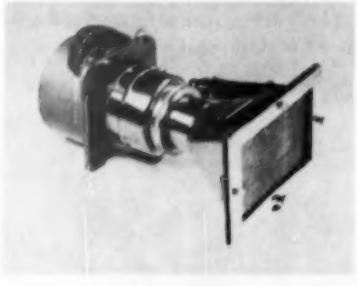
Hermetic Seals

Ceramacite C-200, seals (leak-tight) to 300 stainless steel. Material has high-pressure integrity at 1,100° F and is also acid and alkaline resistant.—Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.



Laboratory Furnace

Laboratory furnace (above) reaches 3,200° F from room temperature in one hour and holds temperature with fuel consumption of 160,000 Btu/hr. Unit operates on any available fuel gas and air. Size is 14 in. dia and 19 in. high. —Selas Corp. of America, Dresher, Pa.



Air Sampler

A larger filter holder (above) is now optional equipment with this portable air sampler. Made of stainless steel and aluminum, it consists of a mounting collar extended to a rectangular

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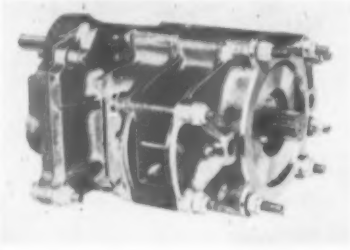
opening. The mouth, protected by a screen, accommodates 6 × 9-in. and 8 × 10-in. filter papers.—Staplex Co., Air Sampler Division, Dept. NU, 777 Fifth Ave., Brooklyn 32, N. Y.

Density Gage

Gammascan measures thickness or density of continuously produced materials. Gammascan uses modified scintillation detection method which senses radiation from sealed, self-contained γ radiation source. It also provides continuous written record of material's thickness as well as meter indication. Time response is in millisecond range. —Nuclear Systems, Budd Co., 2950 Roberts Ave., Philadelphia 32, Pa.

36-Channel Oscillograph

Model 1012, a 36-channel oscillograph above, produces records that are immediately visible and usable. Instrument features five speeds in each of three ranges—0.1–160-in./sec.—and has a 3,000-cps frequency response. Writing speed is up to 20,000 in./sec. Unit accommodates 200 ft of record paper.—Minneapolis-Honeywell Regulator Co., Denver, Colo.



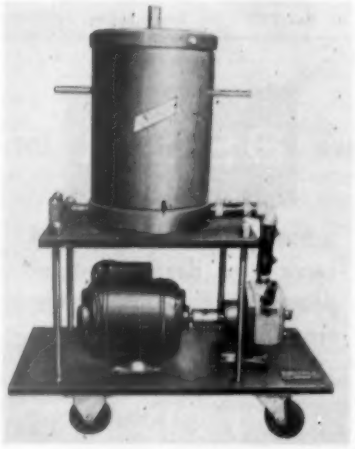
Pneumatic Power

A fast-response pneumatic power source is available for control-rod positioning and other applications. High torque-

to-inertia ratio permits units to follow electronic modulation and to deliver nearly instantaneous starts and stops. One model accelerates 0–100 rpm in 0.00004 sec, operating under 30 psig of applied air pressure against opposing force of 20 lb-in. Materials are composed of magnesium alloys, stainless steel and Stellites. Units are available in ratings 0.66–30 hp, operating at 10–300 psig.—Lear, Inc., 110 Ionia Ave., N.W., Grand Rapids 2, Mich.

High-Temperature Filters

Filters designed to provide particle-free air at temperatures up to 2,300° F are currently being manufactured in connection with nuclear powered aircraft program. They come in two stock models—3F40 and 3F41. Filters are guaranteed to 99.5% efficiency on 0.3-micron particles and are assured to remove particles as small as 0.1 micron. Ceramic construction provides for effective chemical and high-temperature resistance.—Flanders Filters, Inc., PO Box 718, Riverhead, N. Y.



Plastic Filter Pumps

Model VPHI-30DT (above), one of four plastic filter pumps for filtering corrosive solutions will remove particles down to 1 micron in size. This model, largest in series of four models, has a 300 gal/hr capacity.—Sethco Mfg. Co., 2284 Babylon Turnpike, Merrick, N. Y.

Thickness Gage

Model N565, single-channel beta-ray thickness gage, is designed for laboratory and production applications where

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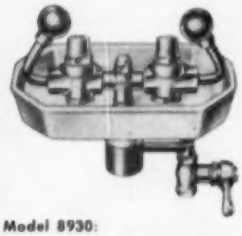

Model 8930: Basic eye-wash model, enameled iron bowl, chrome plated brass heads. HAWS also offers eye and face wash fountains and drench showers.

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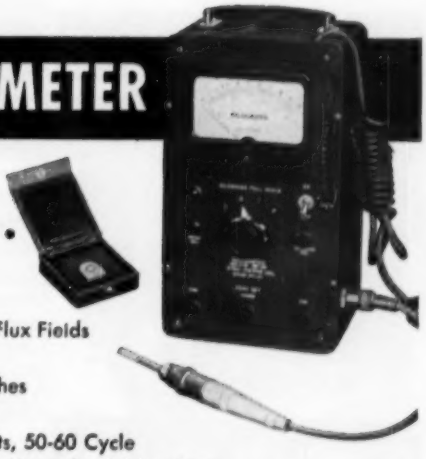

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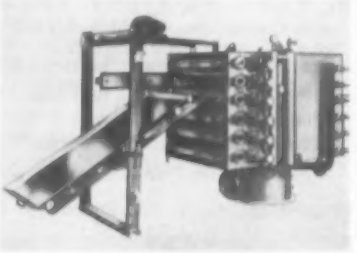
sheeting or coating densities change with each order. Another model, N562, is designed for high-speed production-line use, where stability and minimum surveillance are prime requirements. Measurement range is 4 gm/meter² to 12,500 gm/meter², depending upon β source used; accuracy is $\pm 1\%$ over wide range; time constant is variable from 0.25 to 30 sec.—(Manufactured by Ekco Electronics, England); distributed in U. S. by American Tradair Corp., 34-01 30 St., Long Island City 6, N. Y.

Portable Survey Meter

A ionization chamber beta-gamma radiation survey instrument (above) will detect increments of radiation as small as 0.002 mr/hr above background. This model, AGB-10KG-SR, has a log response permitting readings from 0.01 mr/hr to 10,000 r/hr in three ranges. Battery life of this portable is 350 hr and it has a self-contained radioactive source <1 μc.—Jordan Electronics Co., 3025 W. Mission Rd., Alhambra, Calif.



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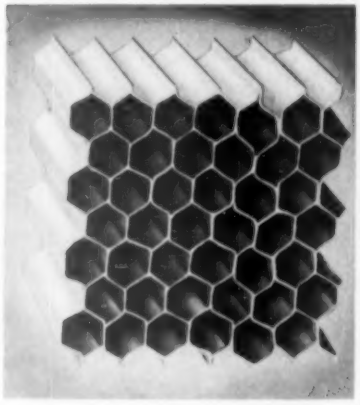
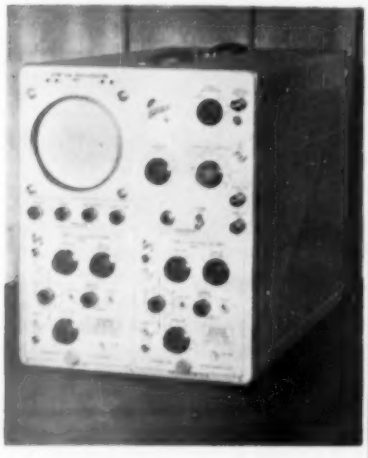
designed for drying materials sensitive to heat and oxidation. Model C51-6 (above) is a continuous working six-compartment machine made of stainless steel, and operating at 35–90° C. Dryers, which are composed of independent compartments, can be operated nearly continuously since one compartment can be loaded while another is drying. Models come with 2 to 6 trays.—Calmic Engineering Co., Terminal Bldg., York St., Toronto, Canada.



Electrical Shielding

Minimum of 100 db attenuation is possible up to frequencies of 10,000 Mc with this series of electrically shielded air inlets (above). They are designed for use with all types of shielded cabinetry and shielding enclosure applications. Air inlets provide more efficient cooling performance and are made of hot tinned dipped brass or steel.—Shielding, Inc., Box 59, Riverton, N. J.



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Oscilloscope model 536 (above) has identical horizontal and vertical de-

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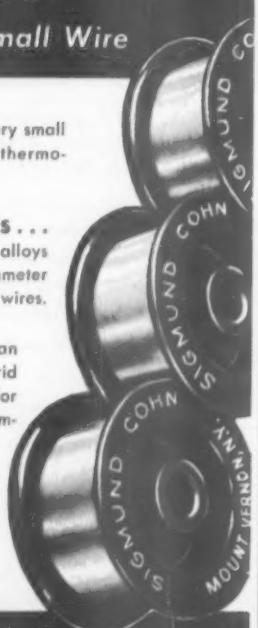

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flection characteristics with same type of preamplifier plugged into both channels. It converts to a general-purpose instrument when model 53/54T time-base generator is plugged into the horizontal amplifier. Horizontal and vertical characteristics with generator include: dc-to-10 mc pass-bands, 0.035-μsec risetimes; amplitude calibrator with 18 steps from 0.2 mv to 100 v.—Tektronix, Inc., PO Box 831, Portland Ore.

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Versatile Scaler

Model 210 has resolving time of 0.8 μsec permitting 10^6 cpm.—Radiation Instrument Development Laboratory, 5737 S. Halsted St., Chicago 21, Ill.

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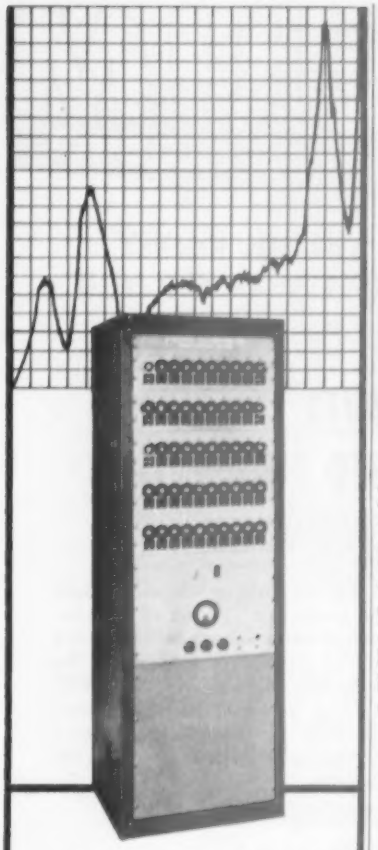

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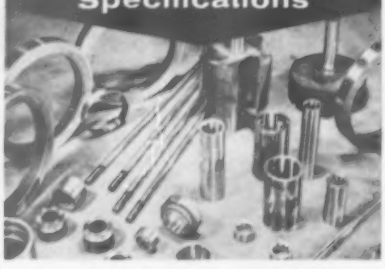

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LITERATURE AVAILABLE

Magnetic and motorized valves in catalog V-55. 19 p. Also, mercury switch equipped controls in catalog 857.—Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.

Electronic parts and equipment catalog compiles 27,000 different items available through this supply house. 404 p.—Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill.

Disposal containers for radioactive wastes are listed in price list with specifications.—Edlow Lead Co., 729 Bank St., Columbus, Ohio.

Ultrastable power supply reported in bulletin 3000-7.—Victoreen Instrument Co., 5806 Hough Ave., Cleveland 3, Ohio.

Porous stainless-steel filters with characteristics, application data and specifications described in catalog 54-101. 12 p.—Cuno Engineering Corp., Meriden, Conn.

Carbon and graphite products and their chemical and physical properties are described in catalog S-5008. 4 p. —National Carbon Co., 30 East 42 St., New York 17, N. Y.

Reactor research services available when MIT's 1-Mw research reactor goes into operation next April are described in new booklet. 25 p. Nuclear Reactor Project, Massachusetts Institute of Technology, 138 Albany St., Cambridge 39, Mass.

Radiation monitoring for application in industrial and community surveys, reactor safety, aerial prospecting, etc. 4 p.—Allied Research Associates, Inc., 43 Leon St., Boston 15, Mass.

Filter membranes for analyzing dispersed particles and micro-organisms. 16 p.—Millipore Filter Corp., 36 Pleasant St., Watertown 72, Mass.

Color codes and calibration symbols for thermocouples and thermocouple extension wires plus pyrometer wire resistance figures are shown in double file chart.—Thermo Electric Co., Saddle River, N. J.

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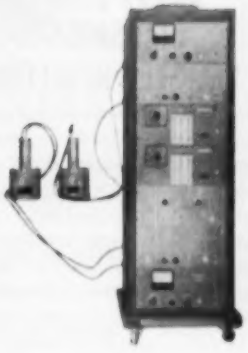

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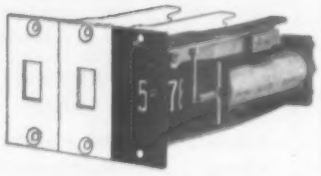

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Accident at Windscale

cont. from p. 130

down for maintenance at least some 30-odd times without incident. In some way the circumstances of the last shutdown differed to produce the worst reactor accident to date. The British at this writing certainly know what went wrong but are not expected to make anything public until conclusion of a cabinet-level investigation headed by Sir William Penney.

Enough bits and pieces of information have filtered out to form the basis for a rough picture of what happened. Apparently the incident can be summed up as a uranium fire (NU, May '54, p. 34) that got so far out of hand before discovery that it could not be controlled by ordinary measures. The heart of the mystery is how the fire got started and managed to spread so far before detection. (At discovery most of the slugs in two fuel channels were already affected. The fire later spread to about 20 channels.) Although the available information is particularly hazy on these points, two factors appear suspicious:

1. At the time of the accident an annealing operation was being carried out on the graphite core. This is a routine maintenance operation designed to relieve radiation-induced stresses in the graphite (Wigner effect). It consists of raising the reactor core to a temperature of about 200° F above the normal graphite temperature and keeping it there for a number of hours. During the annealing, potential energy associated with the radiation-induced defects in the graphite lattice is released in the form of heat. It is known that the quantity of heat released in this way can be large enough to cause a significant increase in temperature (above and beyond the original 200° F elevation) unless adequate core heat-removal is provided. Thus excessive temperatures caused by Wigner-effect energy release might very well have been involved in starting the uranium fire.

2. Also it has been learned that, in addition to producing plutonium, Windscale has been doubling as a facility for in-pile experiments. Certain tests were being carried out in connection with Britain's atomic weapons program. This fact may explain why the difficulty arose on this particular shutdown: i.e., why the graphite-annealing operation, successful on previous shutdowns, ran afoul this time. The implication is that the presence of in-pile experiments (pre-

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Accident at Windscale cont.

sumably still in position during the shutdown) together with the Wigner energy release acted to produce an unforeseen temperature problem. The experimental arrangements, for instance, might have blocked removal of the Wigner-effect heat in some unanticipated way. Novel materials included as part of the in-pile test might have entered into unpredicted chemical reactions when the temperature rose. Possibly the conditions of the experiments themselves may have caused an unforeseen concentration of Wigner energy in the graphite in the neighborhood of the experiments.

Even if the cause of the accident, as finally revealed by the investigating committee, turns out to be something different from the above, it seems very likely that a similar accident could be avoided in the future by improving instrumentation and changing maintenance procedures.

In light of vehement public reaction, it is almost certain that Windscale will be closed down before its anticipated write-off date in 1960. Fortunately Britain no longer depends on Windscale for the bulk of her plutonium production so that her nuclear effort will not be seriously impaired.

The British are most concerned about the effect of the adverse publicity on the civilian power program. Not only could foreign investors be scared off, but the home population itself may question the safety of the Calder Hall family of nuclear power stations. From the time of the first news break public officials have been working to dispel these fears. They have taken every opportunity to point out that, because of fundamental differences in design, what happened to Windscale No. 1 could not happen to any of the Calder-type reactors, mainly because the Calder Hall designs are closed-cycle systems. Thus, if a uranium fire were to break out in the core, any radioactive products would be confined in the primary system and the fire itself could easily be snuffed out by non-drastic methods. The factors which seemingly caused the fire at Windscale would also be absent. There is no Wigner effect hazard, for instance, since the normal operating temperatures for graphite are above the annealing temperature.

To be sure, there is not much question that AEA's arguments are technically sound. It remains to be seen whether scientific facts will successfully prevail against psychological trauma.

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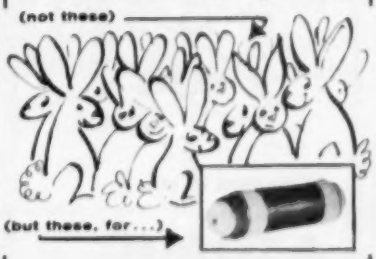

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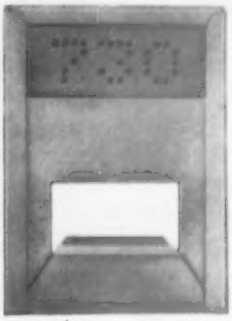

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NEWSMAKERS

Hagan Chemicals & Controls has named **Franklin Michaels** as assistant manager of its firm's newly formed nuclear power division (NU, Oct. '57, 29). He is an electronic engineer, with Hagan since 1949.

John J. McDermott has been promoted from assistant production manager to production manager at Babcock & Wilcox's Barberton, Ohio, plant, where B&W fabricates reactor vessels and other heavy components.

Kaiser Engineers has assigned **A. L. Lindsay, Jr.** as manager of the nuclear engineering development office it has just opened in Tokyo. He will work in conjunction with C. Itoh & Co. on joint nuclear engineering and construction projects in Japan (NU, Oct.' 57, 28). Lindsay's experience includes work with the Univ. of California Radiation Laboratory, California Research & Development Co., Argonne National Laboratory and the Engineering Test Reactor in Idaho.

Robert W. Hartwell has been named general manager of Power Reactor Development Co., which is building the Enrico Fermi fast breeder reactor at Lagoona Beach, Mich. Hartwell, who entered the industrial nuclear field in 1954, had previously served with AEC's Naval Reactors Branch on the *Nautilus* project, and subsequently was named director of Detroit Edison's nuclear department. He became PRDC assistant general manager in January 1956.

Brush Beryllium has named **George S. Mikhalapov** as executive vice-president. He had been manager of engineering development at Knolls Atomic Power Laboratory.

Irving E. Dayton, previously with Babcock & Wilcox's atomic energy division,

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has gone to Swarthmore College as an assistant professor of physics.

Ford Instrument has elected **Charles S. Rockwell** president, succeeding **Raymond F. Jahn,** retired. Rockwell had been vice-president and general manager.

Atomics International has appointed **B. M. Brundage** medical director. He served with the Manhattan District and was AEC's chief medical officer in Oak Ridge and Washington.

ACF's Nuclear Products-Erco division has engaged the following engineers: **W. F. Banks,** from Univ. of Calif.; **W. F. Farmer,** from Pratt & Whitney; **Lewis Silvers,** from Diamond Ordnance Fuse Laboratory; **Salvadore Ceja,** from Bendix Aviation Research Laboratory; **Stephen Lubore,** from Univ. of Maryland; and **David Tate,** from Union Carbide Nuclear Co.

Charles M. Rice has been appointed manager, reactor engineering department, in American-Standard's atomic energy division.

National Bureau of Standards has named chemist **William F. Marlow** to its radioactivity section.

Nuclear Metals, Inc., has elected **Horace H. Willis** as president, director and chairman of the executive commitee. He succeeds **Bruce S. Old,** who had held the post while also serving as vice-president of Arthur D. Little, Inc. Willis had been president of Precision Technology, Livermore. Calif.

Nicholas Metropolis has joined the Univ. of Chicago as professor of physics and director of the computer laboratory at the University's Enrico Fermi Institute for Nuclear Studies. He left Los Alamos Scientific Laboratory where he had worked since 1943 on developing the computers MANIAC I and MANIAC II. He will design a new mathematical analyzer, numerical integrator and computer for the University.

Phillips Petroleum Co.'s atomic energy division has announced the following appointments: **Marx M. Weech** as a staff assistant in the chemical processing plant; **George W. Walpert** as extraction group leader in the chemical engineering development section; and **Sidney Cohen** as a reactor projects engineer.

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This Where To Buy Section supplements other advertising in this issue with additional announcements of products and materials of special interest and application in the nuclear field. Make a habit of checking this page each issue.

NUCLEAR CALENDAR

Nov. 18–20, 19–21—Eleventh and twelfth atomic energy course on industrial uses of radioisotopes, National Industrial Conference Board, Rye, N. Y. (*Westchester Country Club*). Fee $285. Contact John J. McMahon, NICB, 460 Park Ave., New York 22.

Nov. 22—Symposium on tritium in tracer applications, New England Nuclear Corp., and Atomic Associates, Inc., New York (*Statler*). Subjects include: synthesis of tritium labeled compounds, radioassay of tritium by liquid scintillation and gas counting techniques, health physics problems, and applications in biochemical and industrial fields. Contact Seymour Rothchild, New England Nuclear Corp., 575 Albany St., Boston 18.

Nov. 4–Dec. 13—Meeting on radiochemistry of isotopes, Federal Ministry for Atomic Questions, Mainz, Germany. Work-group for Radiochemistry, Max-Planck Institute for Chemistry, Saarstrasse 23, Mainz, Germany.

Dec. 1–6—Annual meeting, American Society of Mechanical Engineers, New York (*Statler, McAlpin*). Special sessions devoted to nuclear energy and mechanical engineers' part in it. Contact L. S. Dennegar, ASME, 29 West 39 St., New York 18.

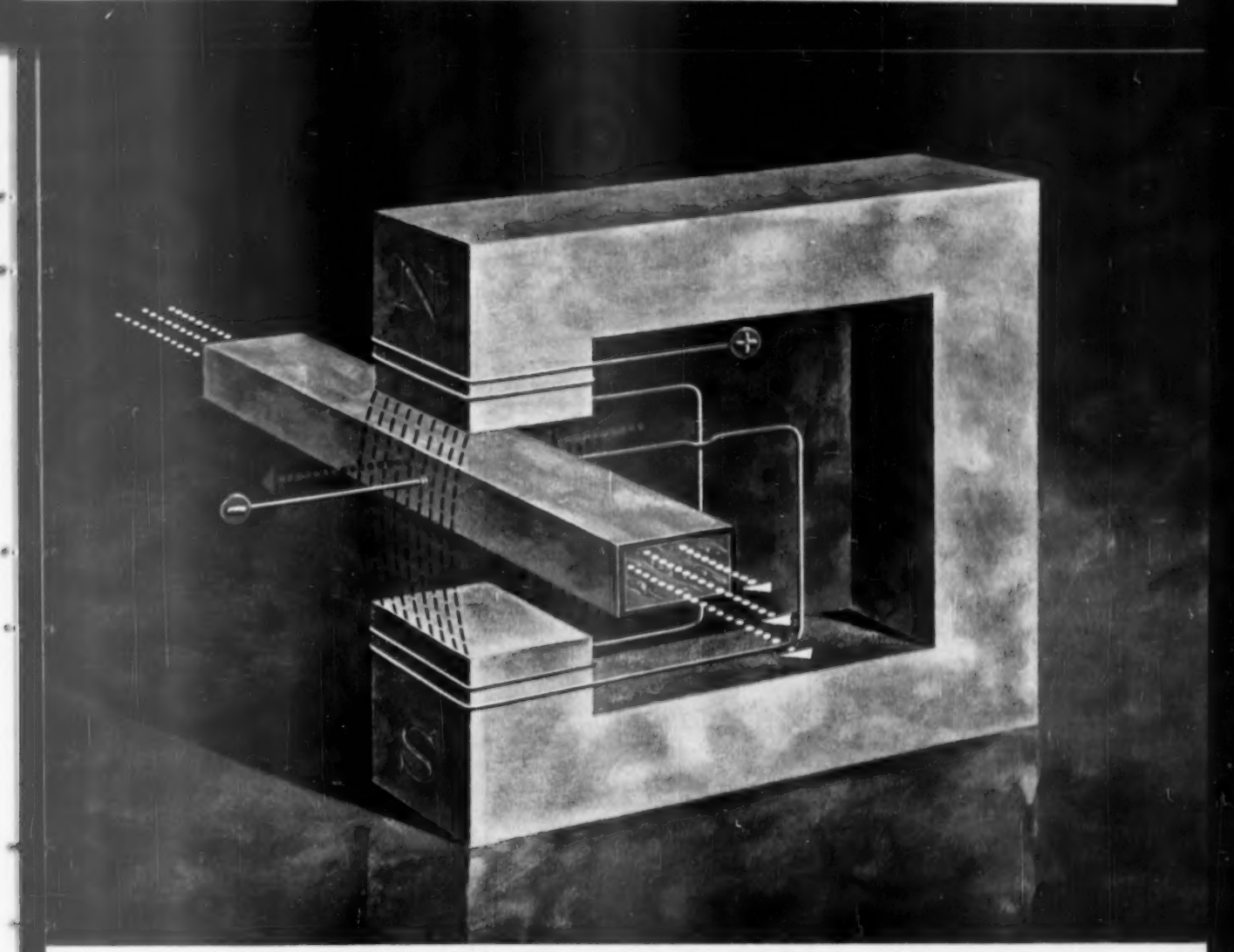
Dec. 8–11—American Institute of Chemical Engineers, annual meeting, Chicago (*Conrad Hilton*). Contact AIChE, 25 West 45 St., New York 36.

Dec. 24–26—Conference on nuclear sizes and density distribution, National Science Foundation, Palo Alto, Calif. Contact Robert Hofstadter, Stanford Univ., Palo Alto.

Jan. 27–28—Sixth Scintillation Counter Symposium, AEC, AIEE, IRE and NBS, Washington, D. C. (*Shoreham*). Contact G. A. Morton, RCA Laboratories, Princeton, N. J.

March 2–6—American Society of Mechanical Engineer's gas turbine power division conference and exhibit, Washington, D. C. (*Shoreham*). Contact L. S. Dennegar, ASME, 29 West 39 St., New York 18.

March 17–21—Nuclear Congress will include four events, at International Amphitheater, Chicago: **A.** Fourth Nuclear Engineering & Science Congress (EJC), running all five days. Contact congress manager, American Institute of Chemical Engineers, 25 West 45 St., New York 18. **B.** Atomic Industrial Forum Atom Fair, all five days, contact J. V. Friel, 304 Architects Bldg, Philadelphia 4. **C.** Sixth Hot Laboratories & Equipment Conference, 19–20th; contact Frank Ring, Jr., ORNL, Oak Ridge, Tenn. **D.** Sixth Atomic Energy in Industry Conference, National Industrial Conference Board, 17–19th; contact John J. McMahon, 460 Park Ave., NYC.



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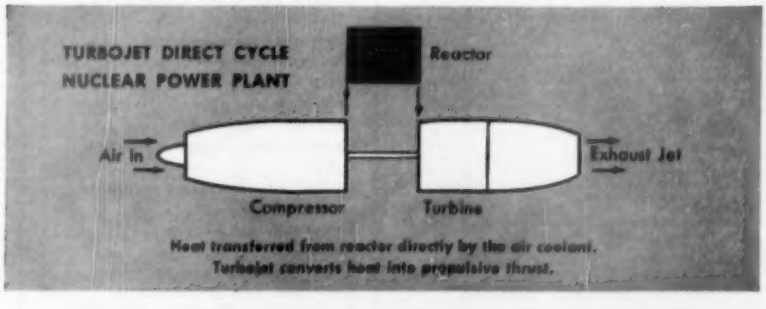

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(My Commission expires March 30, 1959)

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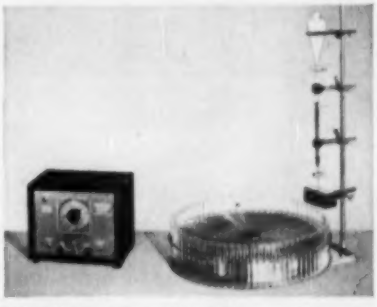

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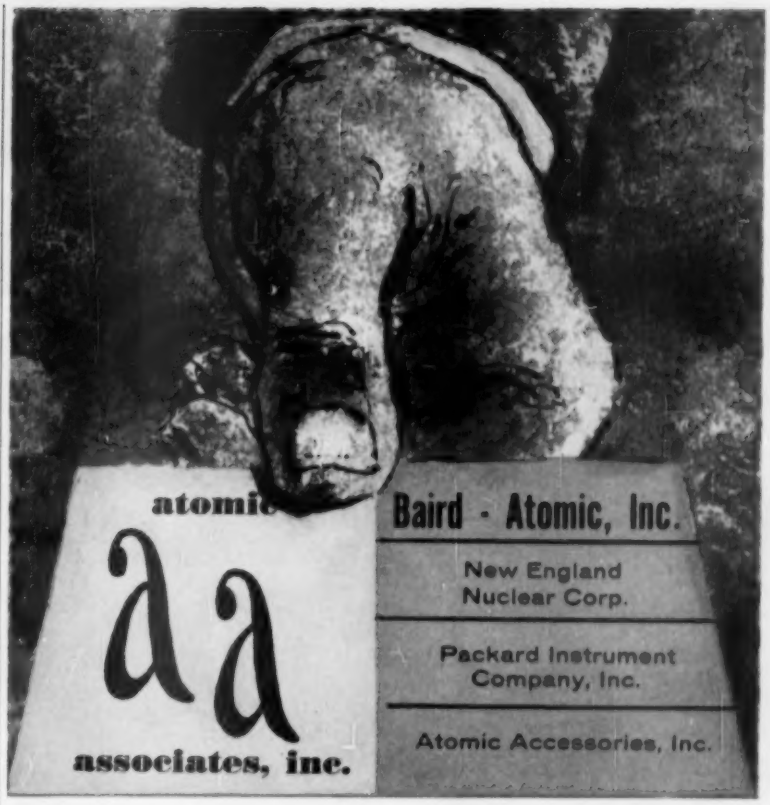

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1957–1958

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Belock Instrument Corp., 111–01 14th Ave., College Point, N. Y.
Bogen Co., David, P. O. Box 500, Paramus, N. J.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Century Electronics & Instruments, Inc., P. O. Box 6216, Tulsa 17, Okla.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Daven Co., The, Route 10, Livingston, N. J.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Detroit Controls Corp., Control Engineering Unit, 560 Providence Highway, Norwood, Mass.
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
Edin Co., Inc., 207 Main St., Worcester, Mass.
Electro Medical Lab., Inc., South Woodstock, Vt.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.

Engineered Electronics Co., 506 E. First St., Santa Ana, Calif.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
FORBO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
General Electric Co., Technical Products Dept., Electronics Park, Syracuse, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 49, Mass.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hatt Associates, Inc., 603 Grand Ave., Englewood, N. J.
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Industrial Instrument Div., Mandrel Industries, Inc., 5134 Glenmont, Houston, Texas
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12115 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
Krohn-Hite Instrument Co., 580 Massachusetts Ave., Cambridge 39, Mass.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Lel, Inc., 380 Oak St., Copiague, N. Y.
Leland Instruments, Ltd., 22-23 Millbank, Westminster, London, S. W. 1, England
Litton Industries, Maryland Div., 4910 Calvert Rd., College Park, Md.
McIntosh Laboratory, Inc., 2 Chambers St., Binghamton, N. Y.
Measurement Engineering, Ltd., Ampriar, Ontario, Canada
Minneapolis-Honeywell Regulator Co., Ordnance Div., 600 2nd St., Hopkins, Minn.
Network Mfg. Corp., 213 W. Fifth St., Bayonne, N. J.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
PACKARD INSTRUMENT CO., INC., P. O. Box 428, La Grange, Ill. ADV. PG. 213
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Phoenix Precision Instrument Co., 3803-05 N. 5th St., Philadelphia, Pa.
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
RADIATION INSTRUMENT CO., P. O. Box 733, Silver Spring, Md. ADV. PG. 198
Scott, Inc., H. H., 111 Powdermill Road, Maynard, Mass.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Tele-Dynamics, Inc., 5000 Palisade Ave., Philadelphia 3, Pa.
Televiso Corp., 1415 Golf Rd., Des Plaines, Ill.
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Waikirt Co., The, 141 W. Hazel St., Inglewood 3, Calif.
Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 91, Conn.
Worner Electronic Devices, Rankin, Ill.

AMPLIFIERS—D.C.

Acme Teletronix Div., NEA Service, Inc., W. Third & Lakeside, Cleveland 13, Ohio
Adler Electronics, Inc., 1 La Fevre Lane, New Rochelle, N. Y.
Advance Instrument Corp., 1109 Sixth Ave., Neptune, N. J.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
Airmec, Ltd., High Wycombe, Buckinghamshire, England
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Allegany Instrument Co., Inc., Cumberland, Md.
American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 60B
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Barker & Williamson, Inc., Canal & Beaver, Bristol, Pa.
Bell Sound Systems, Inc., 555 Marion Rd., Columbus 7, Ohio
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Centralab Div. of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Chicago Aerial Industries, Inc., 1980 Hawthorne Ave., Melrose Park, Ill.
Cinema-Television, Ltd., Worsley Bridge Rd., London, S. E. 26, England
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Davon Co., The, Route 10, Livingston, N. J.
Daystrom, Inc., Daystrom Nuclear Div., P. O Box 347, West Caldwell, N. J.
Detroit Controls Corp., Control Engineering Unit, 560 Providence Highway, Norwood, Mass.
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
Edin Co., Inc., 207 Main St., Worcester, Mass.
Electro Medical Lab., Inc., South Woodstock, Vt.
Electronic Associates, Inc., Long Branch, N. J.
Electronic Engineering Co. of California, 1601 E. Chestnut St., Santa Ana, Calif.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Engineered Electronics Co., 506 E. First St., Santa Ana, Calif.
Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
General Automatic Corp., 12 Carlton Ave., Mountain View, N. J.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
Gray Scientific Div., Remler Co., 2101 Bryant St., San Francisco, Calif.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
HAMMER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Holland Div. of Minneapolis-Honeywell Regulator Co., 5200 E. Evans Ave., Denver 22, Colo.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Industrial Instrument Div., Mandrel Industries, Inc., 5134 Glenmont, Houston, Texas
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.
Isotope Developments Ltd., Boonham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JORDAN ELECTRONICS A DIV. OF THE VICTOREEN INSTRUMENT CO., 3025 W. Mission Rd., Alhambra, Calif. ADV. PG. 188, 189
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12415 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
Kin Tel (Kay Lab), 5725 Kearny Villa Rd., San Diego 11, Calif.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Lel, Inc., 380 Oak St., Copiague, N. Y.
Leland Instruments, Ltd., 22-23 Millbank, Westminster, London, S. W. 1, England
Litton Industries, Maryland Div., 4910 Calvert Rd., College Park, Md.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Measurement Engineering Ltd., Ampriar, Ontario, Canada
Mid-Century Instrumetic Corp., 611 Broadway, New York 12, N. Y.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Minneapolis-Honeywell Regulator Co., Boston Div., 1400 Soldiers Field Rd., Boston 35, Mass.
Minneapolis-Honeywell Regulator Co., Ordnance Div., 600 2nd St., Hopkins, Minn.
Nash & Thompson, Ltd., Oatcroft Road, Chessington, Surrey, England
Network Mfg. Corp., 213 W. Fifth St., Bayonne, N. J.
Neutronics Research Co., 165 Lake St., Waltham, Mass.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Offner Electronics Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.
PARSONS CO., RALPH M., ELECTRONICS DIV., 151 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
Philbrick Researches, Inc., George, 230 Congress St., Boston 10, Mass.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Phoenix Precision Instrument Co., 3803-05 N. 5th St., Philadelphia, Pa.
Photocon Research Products, 421 N. Foothill Blvd., Pasadena 7, Calif.
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Sanborn Co., Industrial Div., 175 Wyman St., Waltham 54, Mass.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Stoelting Co., C. H., 424 N. Homan Ave., Chicago 24, Ill.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Tele-Dynamics, Inc., 5000 Palisade Ave., Philadelphia 3, Pa.
Televiso Corp., 1415 Golf Rd., Des Plaines, Ill.
Texas Instruments Incorporated, 6000 Lemmon Ave., Dallas 9, Texas
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
TULLAMORE ELECTRONICS LABS, 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Vickers Electric Div., Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 91, Conn.

AMPLIFIERS—Linear

Adler Electronics, Inc., 1 La Fevre Lane, New Rochelle, N. Y.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Airborne Instruments Lab., Inc., 160 Old Country Rd., Mineola, N. Y.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34-01 30th St., Long Island City 6, N. Y. ADV. PG. 181
Automatic Timing & Controls, Inc., King of Prussia, Pa.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 60B
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Barker & Williamson, Inc., Canal & Beaver, Bristol, Pa.
Bell Sound Systems, Inc., 555 Marion Rd., Columbus 7, Ohio
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Brüel & Kjaer, Naerum, Denmark
Century Electronics & Instruments, Inc., P. O. Box 6216, Tulsa 17, Okla.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cosmic Radiation Labs., Inc., 247 Blue Point Ave., Blue Point, N. Y.
Davon Co., The, Route 10, Livingston, N. J.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Dynatron Radio Ltd., Castle Hill, Maidenhead, Berks., England
Electro Medical Lab., Inc., South Woodstock, Vt.
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.

Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Engineered Electronics Co., 506 E. First St., Santa Ana, Calif.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
FRANKLIN ELECTRONICS, INC., E. Fourth St., Bridgeport, Pa. ADV. PG. 162
General Radio Co., 275 Massachusetts Ave., Cambridge 49, Mass.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Holland Div. of Minneapolis-Honeywell Regulator Co., 5200 E. Evans Ave., Denver 22, Colo.
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 413, Mountain Lakes, N. J. ADV. PG. 203
Johnson Co., E. F., Waseca, Minn.
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12415 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
Kin Tel (Kay Lab), 5725 Kearny Villa Rd., San Diego 11, Calif.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Minneapolis-Honeywell Regulator Co., Boston Div., 1400 Soldiers Field Rd., Boston 35, Mass.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
Neutronics Laboratory, Tinley Park, Ill.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR-ELECTRONICS CORP., 2632–36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Nuclear Research Applications, Ltd., "Emafco" House, Bell St., Reigate (Surrey), England
Offner Electronics Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.
PACKARD INSTRUMENT CO., INC., P. O. Box 428, La Grange, Ill. ADV. PG. 213
Panax Equipment, Ltd., 173 London Rd., Micham, Surrey, England
Philbrick Researches, Inc., George A., 230 Congress St., Boston 10, Mass.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
SOCIETE D'APPLICATIONS INDUSTRIELLES de la PHYSIQUE (S.A.I.P.), 146, Bd. de Charonne, Paris, France. ADV. PG. 196
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Standard Electronics Div. of Radio Engineering Labs., Inc., 29–01 Borden Ave., Long Island City 1, N. Y.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Technical Measurement Corp., 140-142 State St., New Haven, Conn.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Tele-Dynamics, Inc., 5000 Palisade Ave., Philadelphia 3, Pa.
Televiso Corp., 1415 Golf Rd., Des Plaines, Ill.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

AMPLIFIERS—Logarithmic

Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Audio Instruments Co., Inc., 133 W. 14th St., New York 11, N. Y.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
Daven Co., The, Route 10, Livingston, N. J.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Deltron, Inc., 2905 N. Leithgow St., Philadelphia 23, Pa.
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 49, Mass.
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12415 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Lel, Inc., 380 Oak St., Copiague, N. Y.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Moseley Co., F. L., 409 N. Fair Oaks Ave., Pasadena, Calif.
Nuclear Research Applications, Ltd., "Emafco" House, Bell St., Reigate (Surrey), England
Offner Electronics Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Sanborn Co., Industrial Div., 175 Wyman St., Waltham 54, Mass.
Scott, Inc., H. H., 111 Powdermill Road, Maynard, Mass.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Tele-Dynamics, Inc., 5000 Palisade Ave., Philadelphia 3, Pa.
Televiso Corp., 1415 Golf Rd., Des Plaines, Ill.
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

AMPLIFIERS—Magnetic

Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Advance Instrument Corp., 1109 Sixth Ave., Neptune, N. J.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Aerovox Corp., Pacific Coast Div., 2724 S. Peck Rd., Monrovia, Calif.
Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.
Airpax Products Co., Middle River, Baltimore 20, Md.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Arnold Magnetics Corp., 5962 Smiley Drive, Culver City, Calif.
Atlas Engineering Co., 176 Blue Hill Ave., Roxbury, Mass.
Bolock Instrument Corp., 111–01 14th Ave., College Point, N. Y.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Central Transformer Co., 910 W. Jackson Blvd., Chicago 7, Ill.
Chicago Aerial Industries, Inc., 1980 Hawthorne Ave., Melrose Park, Ill.
Communication Accessories Co., Lee's Summit, Mo.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
D & P, Ltd., 402 E. Gutierrez St., Santa Barbara, Calif.
Detroit Controls Corp., Control Engineering Unit, 560 Providence Highway, Norwood, Mass.
Dietz Design & Mfg. Co., Grandview 14, Mo.
Edin Co., Inc., 207 Main St., Worcester, Mass.
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
FORD INSTRUMENT CO., DIV. OF SPERRY-RAND CORP., 31–10 Thomson Ave., Long Island 1, N. Y. ADV. PG. 125
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
General Magnetics, Inc., 135 Bloomfield Ave., Bloomfield, N. J.
Goldak Co., Inc., 1544 Glenoaks Blvd., Glendale 1, Calif.
Goslin Electric & Mfg. Co., 2921 W. Olive St., Burbank, Calif.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hycor Div. of International Resistance Co., 12970 Bradley Ave., Sylmar, Calif.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
KEPCO LABORATORIES, INC., 131–138 Sanford Ave., Flushing 55, N. Y. ADV. PG. 41
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Lee Electric & Mfg. Co., 2806 Clearwater St., Los Angeles 39, Calif.
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Litton Industries, Maryland Div., 4910 Calvert Rd., College Park, Md.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Magnetics, Inc., Box 391, Butler, Pa.
Maxson Instruments Corp., Sub. of The W. L. Maxson Corp., 47–37 Austell Place, Long Island City 1, N. Y.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Minitron Corp., 5 Oliver St., Newark 2, N. J.
Minneapolis-Honeywell Regulator Co., Boston Div., 1400 Soldiers Field Rd., Boston 35, Mass.
Minneapolis-Honeywell Regulator Co., Ordnance Div., 600 2nd St., Hopkins, Minn.
Norden Ketay Corp, Commerce Rd., Stamford, Conn.
Ortho Filter Corp., 198 Albion Ave., Paterson 3, N. J.
Pentron Corp., 777 S. Tripp, Chicago 24, Ill.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Radio Development & Research Corp., 100 Pennsylvania Ave., Paterson 3, N. J.
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
Sickles Div., F. W., General Instrument Corp., 168 Front St., Chicopee, Mass.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thompson Products, Inc., 2196 Clarkwood Ave., Cleveland 3, Ohio
Torwico Electronics, Inc., 1090 Morris Ave., Union, N. J.
Transformers, Inc., 200 Stage Rd., Vestal, N. Y.
United Transformer Corp., 150 Varick St., New York 13, N. Y.
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Vari-L Co., Inc., P. O. Box 1433, Stamford, Conn.
Vero Mfg. Co., Inc., 2201 Walnut St., Garland, Texas
Vickers Electric Div., Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 91, Conn.

AMPLIFIERS—Servo

Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Advance Instrument Corp., 1109 Sixth Ave., Neptune, N. J.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Arnold Magnetics Corp., 5962 Smiley Drive, Culver City, Calif.

Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barr & Stroud Ltd., Caxton St., Anniesland, Glasgow, W. 3, Scotland
Belock Instrument Corp., 111-01 14th Ave., College Point, N. Y.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Chicago Aerial Industries, Inc., 1980 Hawthorne Ave., Melrose Park, Ill.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Dalmo Victor Co., 1515 Industrial Way, Belmont, Calif.
Detroit Controls Corp., Control Engineering Unit, 560 Providence Highway, Norwood, Mass.
Electronic Associates, Inc., Long Branch, N. J.
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E., 13, England
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
FORD INSTRUMENT CO., DIV. OF SPERRY-RAND CORP., 31-10 Thomsen Ave., Long Island 1, N. Y. ADV. PG. 125
General Magnetics, Inc., 135 Bloomfield Ave., Bloomfield, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Hallpot Corp., Newport Beach, Calif.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Litton Industries, Maryland Div., 4910 Calvert Rd., College Park, Md.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Maxson Instruments Corp., Sub. of The W. L. Maxson Corp., 47-37 Austell Place, Long Island City 1, N. Y.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Minneapolis-Honeywell Regulator Co., Ordnance Div., 600 2nd St., Hopkins, Minn.
Muirhead & Co., Ltd., Beckenham, Kent, England
Nordon Kotay Corp., Commerce Rd., Stamford, Conn.
Offner Electronics Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Phoenix Precision Instrument Co., 3803-05 N. 5th St., Philadelphia, Pa.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Schaevitz Engineering, P. O. Box 505, Camden 1, N. J.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Servomechanisms, Inc., 12500 Aviation Blvd., Hawthorne, Calif.
Servo-Tek Products Co., 1086 Goffle Rd., Hawthorne, N. Y.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Stoelting Co., C. H., 424 N. Homan Ave., Chicago 24, Ill.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Televise Corp., 1415 Golf Rd., Des Plaines, Ill.
Ten Bosch, Inc., M., 80 Wheeler Ave., Pleasantville, N. Y.
Thompson Products, Inc., 2196 Clarkwood Ave., Cleveland 3, Ohio
Torwico Electronics, Inc., 1090 Morris Ave., Union, N. J.
U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Vickers Electric Div., Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

AMPLIFIERS—Wide-Band

Adler Electronics, Inc., 1 La Fevre Lane, New Rochelle, N. Y.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
Airmec Ltd., High Wycombe, Buckinghamshire, England
Allegany Instrument Co., Inc., Cumberland, Md.
American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa.
Aronberg Ultrasonic Lab., Inc., 94 Green St., Jamaica Plain 30, Mass.
Atlantic Research Corp., Electromechanical Div., Alexandria, Va.
Barker & Williamson, Inc., Canal & Beaver, Bristol, Pa.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Blender-Tongue Laboratories, Inc., 9-25 Alling St., Newark 2, N. J.
Bogen Co., David, P. O. Box 500, Paramus, N. J.
Brüel & Kjaer, Naerum, Denmark
Clegg Laboratories Div. of Clegg, Inc., Ridgedale & Hanover Aves., Morristown, N. J.
Dalmo Victor Co., 1515 Industrial Way, Belmont, Calif.
Davon Co., The, Route 10, Livingston, N. J.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Deltron, Inc., 2905 N. Leithgow St., Philadelphia 23, Pa.
Dionner Scientific Co., 888 Galindo St., Concord, Calif.
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
Electrical & Physical Instrument Corp., 42-19 27th St., Long Island City 1, N. Y.
Electronic Associates, Inc., Long Branch, N. J.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass.
General Electric Co., Technical Products Dept., Electronics Park, Syracuse, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Huggins Laboratories, Inc., 711 Hamilton Ave., Menlo Park, Calif.
Instruments for Industries, Inc., 150 Glen Cove Rd., Mineola, N. Y.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
Isotope Developments Ltd., Boonham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Kay Electric Co., 14 Maple Ave., Pine Brook, N. J.
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12115 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
Kin Tel (Kay Lab.), 5725 Kearny Villa Rd., San Diego 11, Calif.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Lel, Inc., 380 Oak St., Copiague, N. Y.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Minneapolis-Honeywell Regulator Co., Boston Div., 1400 Soldiers Field Rd., Boston 35, Mass.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
Nautronics Research Co., 165 Lake St., Waltham, Mass.
New London Instrument Co., P. O. Box 189, New London, Conn.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
PACKARD INSTRUMENT CO., INC., P. O. Box 428, La Grange, Ill. ADV. PG. 213
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Polarad Electronics Corp., 43-20 34th St., Long Island City 1, N. Y.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
RADIATION INSTRUMENT CO., P. O. Box 733, Silver Spring, Md. ADV. PG. 198
Scott, Inc., H. H., 111 Powdermill Road, Maynard, Mass.
SOCIETE D'APPLICATIONS INDUSTRIELLES de la PHYSIQUE (S.A.I.P.), 146, Bd. de Charonne, Paris, France. ADV. PG. 196
Spencer-Kennedy Labs., Inc., 1320 Soldiers Field Rd., Boston 35, Mass.
Standard Electronics Div. of Radio Engineering Labs. Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Tel-Instrument Electronics Corp., 728 Garden St., Carlstadt, N. J.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Tele-Dynamics, Inc., 5000 Pallisade Ave., Philadelphia 3, Pa.
Televise Corp., 1415 Golf Rd., Des Plaines, Ill.
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Waltham Electronics Corp., 751 Main St., Waltham, Mass.
Wave Particle Corp., P. O. Box 252, Menlo Park, Calif.

ANALYSIS—Activation

See SERVICES

ANALYSIS—Beryllium

See SERVICES

ANALYSIS—Spectrographic

See SERVICES

ANALYSIS—Uranium & Radioisotope

See SERVICES

ANALYZERS—Coincidence and Anticoincidence

BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Brüel & Kjaer, Naerum, Denmark
Dalmo Victor Co., 1515 Industrial Way, Belmont, Calif.
EL DORADO ELECTRONICS CO., 1401 Middle Harbor Rd., Oakland, Calif. ADV. PG. 202
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
PACKARD INSTRUMENT CO., INC., P. O. Box 428, La Grange, Ill. ADV. PG. 213
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
Technical Measurement Corp., 140-142 State St., New Haven, Conn.
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

ANALYZERS—Gas

Aloe Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Beckman, Inc., Arnold O., 1020 Mission St., South Pasadena, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Instrument Co., Inc., 3529 Grand Central Terminal, New York 17, N. Y.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Custom Lubricant Co., 743 Dwight Way, Berkeley 10, Calif.
Davis Emergency Equipment Co., Davis Instrument Div. 47 Halleck St., Newark 4, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Ercona Corp., 551 Fifth Ave., New York, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178

Gow-Mac Instrument Co., 100 Kings Rd., Madison, N. J.
HAYS CORP., Michigan City 39, Ind. ADV. PG. 183
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.
Johnson-Williams, Inc., 2625 Park Blvd., Palo Alto, Calif.
King Electric Equipment Co., 9123 Inman Ave., Cleveland 5, Ohio
Kruger Instruments, Harold, P. O. Box 164, San Gabriel, Calif.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Manufacturers Engineering & Equipment Corp., York & Mills Rds., Hatboro, Pa.
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
NRC EQUIPMENT CORP., A SUB. OF NATIONAL RESEARCH CORP., 87 Charlemont St., Newton Highlands 61, Mass. ADV. PG. 32
National Instrument Labs., Inc., 6108 Rhode Island Ave., Riverdale, Md.
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Permutit Co., 50 W. 44th St., New York 36, N. Y.
Phoenix Precision Instrument Co., 3803-05 N. 5th St., Philadelphia, Pa.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Scientific Instruments Div. of Beckman Instruments, Inc., Fullerton, Calif.
Servall, Inc., Ivan, P. O. Box 230, Pearl St., Norwalk, Conn.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Spinco Div. of Beckman Instruments, Inc., 1117 California Ave., Palo Alto, Calif.
Tatler & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Thomas Co., Arthur A., Vine St. at Third, Box 779, Philadelphia 5, Pa.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lanese, England
Victory Engineering Corp., 77 Springfield Rd., Union, N. J.

ANALYZERS—Isotope

Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
Applied Physics Corp., 362 W. Colorado St., Pasadena 1, Calif.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
Isotope Developments Ltd., Boenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167

ANALYZERS—Multichannel

BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
EL DORADO ELECTRONICS CO., 1401 Middle Harbor Rd., Oakland, Calif. ADV. PG. 202
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Pacific Electro-Nuclear Co., 11818 Teale St., Culver City, Calif.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
SOCIETE D'APPLICATIONS INDUSTRIELLES de la PHYSIQUE (S.A.I.P.), 146, Bd. de Charonne, Paris, France. ADV. PG. 196
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Technical Measurement Corp., 140-142 State St., New Haven, Conn.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140

ANALYZERS—Pulse Height

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Berkeley Crystal Co., 1740 University Ave., Berkeley 3, Calif.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Cosmic Radiation Labs., Inc., 247 Blue Point Ave., Blue Point, N. Y.
Daimo Victor Co., 1515 Industrial Way, Belmont, Calif.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Davtron Engineering, 1 Winslow St., Redwood City, Calif.
Dynatron Radio Ltd., Castle Hill, Maidenhead, Berks., England
EL DORADO ELECTRONICS CO., 1401 Middle Harbor Rd., Oakland, Calif. ADV. PG. 202
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
FRANKLIN ELECTRONICS, INC., E. Fourth St., Bridgeport, Pa. ADV. PG. 162
Isotope Developments Ltd., Boenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Pacific Electro-Nuclear Co., 11818 Teale St., Culver City, Calif.
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Technical Measurement Corp., 140-142 State St., New Haven, Conn.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

ANALYZERS—Spectrochemical

Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
Applied Physics Corp., 362 W. Colorado St., Pasadena 1, Calif.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Neutronics Research Co., 165 Lake St., Waltham, Mass.
Phoenix Precision Instrument Co., 3803-05 N. 5th St., Philadelphia, Pa.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Scientific Instruments Div. of Beckman Instruments, Inc., Fullerton, Calif.

ANNUNCIATORS

Autocall Co., Shelby, Ohio
Bogan Co., David, P. O. Box 500, Paramus, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Panellit, Inc., 7401 N. Hamlin Ave., Skokie, Ill.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Scom Instrument Corp., 1811 W. Irving Park Rd., Chicago, Ill.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

ASBESTOS—Filtering

See FILTERS—Asbestos

AUTOCLAVES

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Aetna Scientific Co., Second & Spring Sts., Everett 49, Mass.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Alse Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Springs, Md.
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
Autoclave Eng. Sales Corp., 2930 W. 22nd St., Erie, Pa.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Barnstead Still & Sterilizer Co., 222 Lonesville Terrace, Boston 31, Mass.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
Doyle & Roth Mfg. Co., Inc., 136-50 24th St., Brooklyn 32, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
GRAVER TANK & MFG. CO., INC., 4809 Tod Ave., East Chicago, Ind. ADV. PG. 127
Hunt, Rodney Machine Co., 46 Mill St., Orange, Mass.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
New York Shipbuilding Corp. Camden, N. J.
PACIFIC COAST ENGINEERING CO., Oak & Clement Sts., Alameda, Calif. ADV. PG. 116
Pelton & Crane Co., 200 Clanton Rd., Charlotte, N. C.
Ploudler Co., 1002 West Ave., Rochester, N. Y.
Struthers-Wells Corp., Warren, Pa.
Thermal Refractories Corp., 4501 Dell Ave., North Bergen, N. J.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lanese, England
Townson & Mercer, Ltd., Croydon, Surrey, England

BADGES—Film

See DOSIMETERS—Film Badge

BALANCES

See also SCALES

BALANCES—Analytical

Aloe Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Mettler Instrument Corp., Hightstown, N. J.
Ohaus Scale Corp., 1050 Commerce Ave., Union, N. J.
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.
Stanton Instruments, Ltd., 119 Oxford St., London, W. 1, England
Thomas Co., Arthur H., Vine St. at Third, Box 779, Philadelphia 5, Pa.
Torsion Balance Co., 35 Monhegan St., Clifton, N. J.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.
Yonkers Laboratory Supply Co., 70 Palisdale Ave., Yonkers 2, N. Y.

BALANCES—Heavy Duty

Aloe Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Exact Weight Scale Co., 538 E. Town St., Dept. A, Columbus 15, Ohio
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Mettler Instrument Corp., Hightstown, N. J.
Ohaus Scale Corp., 1050 Commerce Ave., Union, N. J.
Stanton Instruments, Ltd., 119 Oxford St., London, W. 1, England
Torsion Balance Co., 35 Monhegan St., Clifton, N. J.
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.

BALL MILLS

Abbe Engineering Co., 50 Church St., New York 7, N. Y.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y.
Hammel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
Humboldt Mfg. Co., 2014 N. Whipple St., Chicago 47, Ill.
Kennametal, Inc., Latrobe, Pa.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
Nordberg Mfg. Co., Milwaukee, Wis.
U. S. Stoneware Co., Akron 9, Ohio

BATHS—Constant Temperature

Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Chicago Apparatus Co., 1735 N. Ashland Ave., Chicago 22, Ill.
Custom Lubricant Co., 743 Dwight Way, Berkeley 10, Calif.
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Harlss, Granta Terrace, Stapleford, Cambridge, England
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.
Kinetic Instrument Co., 3250 Skokie Valley Rd., Highland Park, Ill.
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill.
LaPine & Co., Arthur S., 6001 S. Knox Ave., Chicago 29, Ill.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Measurement Engineering, Ltd., Amprior, Ontario, Canada
Modern Laboratory Equipment Co., 1809-11 First Ave., New York 28, N. Y.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Research Specialties Co., 2005 Hopkins St., Berkeley 7, Calif.
Thermo-Electric Co., Inc., Rochelle Park Post Office, Saddle Brook, N. J.
Thomas Co., Arthur H., Vine St. at Third, Box 779, Philadelphia 5, Pa.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Townson & Mercer, Ltd., Croydon, Surrey, England
Victory Engineering Corp., 77 Springfield Rd., Union, N. J.
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.

BATTERIES—Mercury

Magnavox Co., Fort Wayne, Ind.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Ray-O-Vac Co., Madison, Wis.

BATTERIES—Nuclear

KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Radiation Research Corp., 140 E. 59th St., New York, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50

BELLOWS & EXPANSION JOINTS

Badger Mfg. Co., 230 Bent St., Cambridge 41, Mass.
Belfab Corp., The, 11 Ramah Circle, Agawam, Mass.
Breeze Corporations, Inc., 700 Liberty Ave., Union, N. J.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Burton Mfg., Co., 2520 Colorado Ave., Santa Monica, Calif.
Chicago Gasket Co., 1271 W. North Ave., Chicago 22, Ill.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Dore, Inc., John L., 5408 Schuler St., Houston, Texas
Emerson Plastics Corp., 1383 Seabury Ave., Bronx 61, N. Y.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Fulton Syphon Division, Robertshaw-Fulton Controls Co., Knoxville, Tenn.
Nucledyne Corp., Sub. of Cook Electric Co., 8100 N. Monticello Ave., Skokie, Ill.
PRATT CO., HENRY, 2222 S. Halsted St., Chicago, Ill. ADV. PG. 70
Resistoflex Corp., Roseland, N. J.
Sarco Co., Inc., 350 Fifth Ave., New York 1, N. Y.
SOLAR AIRCRAFT CO., 2200 Pacific Highway, San Diego 12, Calif. ADV. PG. 61
U. S. Gasket Co., 600 N. 10th St., Camden 1, N. J.
Zallea Brothers, 800 Locust St., Wilmington, Del.

BETA GAGES

See GAGES—Thickness or Density, Radioactivity

BETA-RAY SOURCES

See ISOTOPES—Radioactive

BETATRONS

See ACCELERATORS—Particle

BI-METALS—Thermostatic

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Gardo Mfg. Co., 588 Eddy St., Providence 3, R. I.
Kennametal, Inc., Latrobe, Pa.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Var-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

BLOWERS

Air Controls, Inc., 2312 Superior Ave., Cleveland 14, Ohio
Air Marine Motors, Inc., 369 Bay View Ave., Amityville, N. Y.
Amco Engineering Co., 7333 Alaslie St., Chicago 31, Ill.
American Agile Corp., P. O. Box 168, Bedford, Ohio
American Blower Div., American Radiator & Standard Corp., 8111 Tireman Ave., Dearborn, Mich.
American Machine Products Co., Marshalltown, Iowa
Brown Boveri Corp., 19 Rector St., New York 6, N. Y.
Century Fan & Ventilator Co., 25 Cedar St., Stamford, Conn.
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230-11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
DeBothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.
Fasco Industries, Inc., Rochester 2, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hamilton Mfg. Co., Two Rivers, Wis.
Howard Industries, Inc., Divs.: Cyclohm Motor Corp., Electric Motor Corp., Racine, Wis.
Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, Ill.
Joy Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.
Redmond Co., Inc., Owosso, Mich.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Research Vacuum Supply Co., 6712 N. Clark St., Chicago, Ill.
Retron Mfg. Co., 7 Schoonmaker Lane, Woodstock, N. Y.
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Torit Mfg. Co., Walnut & Exchange St., St. Paul, Minn.
Townson & Mercer, Ltd., Croydon, Surrey, England
U. S. Hoffman Machinery Corp., 103 Fourth Ave., New York 3, N. Y.

BOOKS—Technical

Academic Press Inc., 111 Fifth Ave., New York 3, N. Y.
Addison-Wesley Publishing Co., Inc., Reading, Mass.
Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill.
Blakiston Div. of McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y.
Consultants Bureau, Inc., 227 W. 17th St., New York 11, N. Y.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Interscience Publishers, Inc., 250 Fifth Ave., New York, N. Y.
McGRAW-HILL BOOK CO., INC., 330 W. 42nd St., New York 36, N. Y. ADV. PG. 123
McKay Co., Inc., David, 55 Fifth Ave., New York 3, N. Y.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Neutronics Research Co., 165 Lake St., Waltham, Mass.
Oxford University Press, 114 Fifth Ave., New York 11, N. Y.
Pergamon Press, Inc., 122 E. 55th St., New York 22, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Philosophical Library, 15 E. 40th St., New York 16, N. Y.
Prentice-Hall, Inc., Route 9W, Englewood Cliffs, N. J.
Readex Microprint Corp., 100 Fifth Ave., New York, N. Y.
Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y.
Sams & Co., Inc., Howard W., 2201 E. 46th St., Indianapolis 5, Ind.
Scientific Equipment Co., 23 N. Hawthorne Lane, Indianapolis 19, Ind.
Technical Dictionaries Co., Box 144, New York 31, N. Y.
United Catalog Publishers, Inc., 60 Madison Ave., Hempstead, N. Y.
University of Chicago Press, 5750 Ellis Ave., Chicago 37, Ill.
VAN NOSTRAND CO., INC., D., 120 Alexander St., Princeton, N. J. ADV. PG. 15
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.
Wiley & Sons Inc., John, 440 Fourth Ave., New York 16, N. Y.
YEAR BOOK PUBLISHERS, INC., 200 E. Illinois St., Chicago 11, Ill. ADV. PG. 206

BORON & BORON CONTAINING MATERIALS

Adkins & Merrill, Sudbury, Mass.
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Anchor Metal Co., 986 Meeker Ave., Brooklyn 22, N. Y.

Bark & Co., Inc., F. W., Park Place East, Wood Ridge, N. J.
Berkeley Enterprises, Inc., 513 Avenue of the Americas, New York 11, N. Y.
Boralite Corp., 320 Yonkers Ave., Yonkers, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Conneaut Rubber & Plastic Div. of U. S. Stoneware Co., Commerce St., Conneaut, Ohio
Cooper Metallurgical Associates, Box 3991, Cleveland 20, Ohio
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Monsanto Chemical Co., Inorganic Chemical Div., 710 N. 12th Blvd., St. Louis 1, Mo.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
NORTON CO., New Bond St., Worcester 6, Mass. ADV. PG. 37
SHIELDALLOY CORP., Newfield, N. J. ADV. PG. 143
Sintercast Corp. of America, 134 Woodworth Ave., Yonkers, N. Y.
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

BORON PARTS

Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
NORTON CO., New Bond St., Worcester 6, Mass. ADV. PG. 37

BOTTLES

See CONTAINERS

BOXES

See GLOVE BOXES

BRICK—Acid Resisting

Acme Brick Co., P. O. Box 425, Fort Worth 1, Texas
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Alpha Metals, Inc., 56 Water St., Jersey City 4, N. J.
Carborundum Co., Refractories Div., Keasbey, N. J.
Centralab Div. of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Electro Chemical Engineering & Mfg. Co., 750 N. Broad St., Emmaus, Pa.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Great Lakes Carbon Corp., 18 E. 48th St., New York, N. Y.
Harbison-Walker Refractories Co., Farmers Bank Bldg., Pittsburgh 22, Pa.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Lapp Insulator Co., Inc., 40 Gilbert St., LeRoy, N. Y.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Robinson Clay Products Co., The, 65 W. State St., Akron 9, Ohio
Thermal Refractories Corp., 4501 Dell Ave., North Bergen, N. J.
Toronto Fire Brick Co., Stratton, Ohio
United Materials & Richmond Brick Co., Ltd., Pt. Richmond, Calif.
U. S. Stoneware Co., Akron 9, Ohio

BRICK—Radiation Shielding

Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 60B
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
CONCRETE FABRICATORS, INC., 568 Union Commerce Bldg., Cleveland 14, Ohio. ADV. PG. 208
Edlow Lead Co., 729 Bank St., Columbus 16, Ohio
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
General Lead Construction Corp., 1800 Harrison Ave., Kearny, N. J.
Harbison-Walker Refractories Co., Farmers Bank Bldg., Pittsburgh 22, Pa.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotope Accessories Co., Box 9354, Philadelphia 39, Pa.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
LENNARD CO., INC., P. M., 1 Hansen Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
METALS DISINTEGRATING CO., INC., P. O. Box 290, Elizabeth, N. J. ADV. PG. 205
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Nuclear Research Applications, Ltd., "Emefco" House, Ball St., Reigate (Surrey) England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
Toronto Fire Brick Co., Stratton, Ohio

BUBBLE TRAYS

See SCRUBBERS—Gas

BURETTES

See LABORATORY APPARATUS

BURETTES—Automatic

American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Isotope Accessories Co., Box 9354, Philadelphia 39, Pa.
Kontes Glass Co., Dept P-159, Vineland, N. J.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Science Associates, 53 Manor Drive, Newark 6, N. J.
Roscher & Botzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Townson & Mercer, Ltd., Croydon, Surrey, England
Wakefield Industries, Inc., 5107 W. Grove St., Skokie, Ill.
Will Corp., Box 1050, Rochester 3, N. Y.

BURNERS—Blast

American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Humboldt Mfg. Co., 2014 N. Whipple St., Chicago 47, Ill.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Surface Combustion Corp., Air Conditioning Div., 23 Dorr, Toledo 1, Ohio
Thermal Refractories Corp., 4501 Dell Ave., North Bergen, N. J.

CABINETS—Drying

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Aloe Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Bernard-Franklin Co., Inc., 4155 E. Hedley St., Philadelphia 37, Pa.
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Brown Morse Co., Muskegon, Mich.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Duralab Equipment Corp., 980 Linwood St., Brooklyn 8, N. Y.
Falstrom Co., 7 Falstrom Court, Passic, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Herlss, Granta Terrace, Stapleford, Cambridge, England
High Vacuum Equipment Corp., 2 Churchill Rd., Hingham, Mass.
KEWAUNEE MFG. CO., 5083 S. Center St., Adrian, Mich. ADV. PG. 174
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill.
LENNARD CO., INC., P. M., 1 Hansen Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Lyndon Brothers, Inc., 85 Zabriskie St., Hackensack, N. J.
Metalab Equipment Co., Div. of Norbute Corp., 282 Duffy Ave., Hicksville, N. Y.
Modern Laboratory Equipment Co., 1809-11 First Ave., New York 28, N. Y.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Steiner-Ives Co., Springfield Rd., Union, N. J.
Thermal Refractories Corp., 4501 Dell Ave., North Bergen, N. J.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Townson & Mercer, Ltd., Croydon, Surrey, England

CABINETS—Instrument

See CONSOLES & CABINETS

CAMERAS—Recording

Abrams Instrument Corp., 600-620 E. Shiawassee St., Lansing, Mich.
Allegany Instrument Co., Inc., Cumberland, Md.
Berndt-Bach, Inc., 6900 Romaine St., Los Angeles 38, Calif.
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Cambridge Instrument Co., Inc., 3529 Grand Central Terminal, New York 17, N. Y.
Canadian Applied Research, Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Chicago Aerial Industries, Inc., 1980 Hawthorne Ave., Melrose Park, Ill.
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
Ercona Corp., 551 Fifth Ave., New York, N. Y.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 8 Aerial Way, Syosset, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Graflex, Inc., 134 Clarissa St., Rochester 8, N. Y.
Hott Associates, Inc., 603 Grand Ave., Englewood, N. J.
Industrial Instrument Div., Mandrel Industries, Inc., 5134 Glenmont, Houston, Texas
Leitz, Inc., E., 468 Fourth Ave., New York, N. Y.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Peerless Instrument Co., Inc., 90-15 Corona Ave., Elmhurst 73, N. Y.
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
PHILIPS GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Taller & Cooper, Inc., 75 Front St., Brooklyn, N. Y.
Vectron, Inc., 1620 Trapelo Rd., Waltham 54, Mass.

CAMERAS—Television

Berndt-Bach, Inc., 6900 Romaine St., Los Angeles 38, Calif.
Blonder-Tongue Laboratories, Inc., 9-25 Alling St., Newark 2, N. J.
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Dage Television Div. of Thompson Products, Inc., 10th & Sheridan, Michigan City, Ind.
Diamond Power Specialty Corp., Lancaster, Ohio
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
General Precision Laboratory, Inc., 63 Bedford Rd., Pleasantville, N. Y.
Gibbs Mfg. Co., N. Main St., Janesville, Wis.
Kin Tel (Kay Lab), 5725 Kearny Villa Rd., San Diego 11, Calif.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Taller & Cooper, Inc., 75 Front St., Brooklyn, N. Y.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.

CAMERAS—X-Ray

See RADIOGRAPHIC EQUIPMENT—X-Ray

CAPACITORS

NOTE: Various types of capacitors are not indicated in this listing. Contact manufacturer for specific type (s) desired.

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Airborne Accessories Corp., 1414 Chestnut Ave., Hillside 5, N. J.
AMERICAN LAVA CORP., STEATITE DIV., Manufacturers Rd., Chattanooga 5, Tenn. ADV. PG. 52
Amp, Incorporated, Harrisburg, Pa.
Amp, Incorporated, Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
Arnhold Ceramics, Inc., 1 E. 57th St., New York 22, N. Y.
Astron Corp., 255 Grant Ave., East Newark, N. J.
Axel Bros., Inc., Electronics Div., 134-20 Jamaica Ave., Jamaica 18, N. Y.
Balco Research Labs., 49-53, Edison Place, Newark 2, N. J.
Barker & Williamson, Inc., Canal & Beaver, Bristol, Pa.
BUD RADIO, INC., 2118 E. 55th St., Cleveland 3, Ohio. ADV. PG. 190
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass.
Cardwell Condenser Corp., 97 Whiting St., Plainville, Conn.
Centralab Division of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Condenser Products Div. of New Haven Clock & Watch Co., 140 Hamilton St., New Haven, Conn.
Cornell-Dubilier Electric Corp., South Plainfield, N. J.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Eitel-McCullough, Inc., San Bruno, Calif.
Electro-Measurements, Inc., 7524 S. W. Macadam Ave., Portland 1, Ore.
Erie Resistor Corp., 644 W. 12th St., Erie, Pa.
Fansteel Metallurgical Corp., North Chicago, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Gudeman Co., 340 W. Huron St., Chicago 10, Ill.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hallett Mfg. Co., 5910 Bowcroft Ave., Los Angeles 16, Calif.
Industrial Condenser Corp., 3243 N. California Ave., Chicago 18, Ill.
Jeffers Electronics Div., Speer Carbon Co., DuBois, Pa.
Jennings Radio Mfg. Corp., 970 McLaughlin Ave., P. O. Box 1278, San Jose 12, Calif.
Johnson Co., E. F., Waseca, Minn.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Muirhead & Co., Ltd., Beckenham, Kent, England
Ohmite Mfg. Co., 3601 Howard St., Skokie, Ill.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Plastic Capacitors, Inc., 2620 N. Clybourn Ave., Chicago 14, Ill.
Pyramid Electric Co., 1445 Hudson Blvd., North Bergen, N. J.
Radiation Research Corp., 140 E. 59th St., New York, N. Y.
Sangamo Electric Co., Electronic Div., Springfield, Ill.
Sarkes Tarzian, Inc., 415 N. College Ave., Bloomington, Ind.
Sickles Div., F. W., General Instrument Corp., 165 Front St., Chicopee, Mass.
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
Speer Carbon Co., St. Marys, Pa.
Sprague Electric Co., North Adams, Mass.
Tansitor Electronics, Inc., West Road, Bennington, Vt.
Televise Corp., 1415 Golf Rd., Des Plaines, Ill.
Tobe Deutschmann Corp., Providence Highway, Norwood, Mass.
Trionics Corp., P. O. Box 548, Madison 1, Wis.

CARBON GRAPHITE

See GRAPHITE

CARBON—Radioactive

See ISOTOPES—Radioactive

CENTRIFUGES

Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Clay-Adams, Inc., 141 E. 25th St., New York 10, N. Y.
Custom Scientific Instruments, Inc., P. O. Box 170, Kearny, N. J.
Dorr-Oliver, Inc., Barry Place, Stamford, Conn.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Genisco, Inc., 2233 Federal Ave., Los Angeles 64, Calif.
Humboldt Mfg. Co., 2014 N. Whipple St., Chicago 47, Ill.
Hycon Electronics, Inc., P. O. Bin D, Pasadena, Calif.
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.
International Equipment Co., 1284 Soldiers Field Rd., Boston 35, Mass.
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill.
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
Modern Laboratory Equipment Co., 1809-11 First Ave., New York 28, N. Y.
Niagara Filters Div. & Tolhurst Centrifugals Div., American Machine & Metals, Inc., East Moline, Ill.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Phillips-Drucker, Route 1, P. O. Box 507, Astoria, Ore.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sorvall, Inc., Ivan, P. O. Box 230, Pearl St., Norwalk, Conn.
Spinco Div. of Beckman Instruments, Inc., 1117 California Ave., Palo Alto, Calif.
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

CERAMICS

ALITE DIV. OF U. S. STONEWARE CO., P. O. Box 119, Orrville, Pa. ADV. PG. 49
AMERICAN LAVA CORP., STEATITE DIV., Manufacturers Rd., Chattanooga 5, Tenn. ADV. PG. 52
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Erie Resistor Corp., Erie 6, Pa.
FRENCHTOWN PORCELAIN CO., Frenchtown, N. J. ADV. PG. 144
General Ceramics Corp., 250 Crows Mill Rd., Keasbey, N. J.
Lapp Insulator Co., Inc., 40 Gilbert St., Le Roy, N. Y.
Mansol Ceramics Co., 140 Little St., Belleville, N. J.
Maryland Lava Co., Ceramic Dept., Bel Air, Md.
National Ceramic Co., 400 Southard St., Trenton 2, N. J.
Raytheon Mfg. Co., Ceramic Sales, Foundry Ave., Waltham, Mass.
Steward Mfg. Co., D. M., E. 36th St., Chattanooga 1, Tenn.
Superior Steatite & Ceramic Corp., 83-91 W. Forest Ave., Englewood, N. J.
Thermal Refractories Corp., 4501 Dell Ave., North Bergen, N. J.
Thor Ceramics, Inc., 225 Belleville Ave., Bloomfield, N. J.
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.

CHAMBERS—Environmental Test

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Airoco Inc., 2323 Second Ave., Schenectady, N. Y.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
American Research Corp., Route 6, Farmington, Conn.
Anetsberger Bros., Northbrook, Ill.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Conrad Inc., 141 Jefferson St., Holland, Mich.
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230-11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Custom Scientific Instruments, Inc., P. O. Box 170, Kearny, N. J.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Environmental Equipment Corp., 369 Linden St., Brooklyn 27, N. Y.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Falstrom Co., 7 Falstrom Court, Passic, N. J.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Koven Fabricators, Inc., 90 E. Dickerson St., Dover, N. J.
L&B Welding Equipment, Inc., 2424 6th St., Berkeley, Calif.
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Modern Laboratory Equipment Co., 1809-11 First Ave., New York 28, N. Y.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
NRC EQUIPMENT CORP., A SUB. OF NATIONAL RESEARCH CORP., 87 Charlemont St., Newton Highlands 61, Mass. ADV. PG. 32
Nucledyne Corp. Sub. of Cook Electric Co., 8100 N. Monticello Ave., Skokie, Ill.
Parisier & Co., Maurice I., 741-745 Washington St., New York 14, N. Y.
Standard Railway Equipment Mfg. Co., 310 S. Michigan Ave., Chicago 4, Ill.
Tenney Engineering Inc., 1090 Springfield Rd., Union, N. J.
Trap-Arctic, Inc., 627 S. Mulberry St., Muncie, Ind.
Webber Corp., 24 S. Keystone Ave., Indianapolis, Ind.

CHAMBERS—Fission

Aerojet-General Nucleonics, San Ramon, Calif.
Applied Physics Corp., 362 W. Colorado St., Pasadena 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Nautronics Laboratory, Tinley Park, Ill.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
WESTINGHOUSE ELECTRIC CORP., ELECTRONIC TUBE DIV., Box 284, Elmira, N. Y. ADV. PG. 113

CHAMBERS—Ionization

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
Aerojet-General Nucleonics, San Ramon, Calif.
ANTON ELECTRONIC LAB., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Applied Physics Corp., 362 W. Colorado St., Pasadena 1, Calif.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Eichner Instruments Co., I. C., 19 Sebago St., Clifton, N. J.
Frederick Co., George E. Bethayres, Pa.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Isotope Developments Ltd., Boonham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
JORDAN ELECTRONICS A DIV. OF THE VICTOREEN INSTRUMENT CO., 3025 W. Mission Rd., Alhambra, Calif. ADV. PG. 188, 189
Landsverk Electrometer Co., 550-552 W. Garfield Ave., Glendale 4, Calif.
Network Mfg. Corp., 213 W. Fifth St., Bayonne, N. J.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp., of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St. Skokie, Ill. ADV PG. 29
SOCIETE D'APPLICATIONS INDUSTRIELLES de la PHYSIQUE (S.A.I.P.), 146, Bd. de Charonne, Paris, France. ADV. PG. 196
Salus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W 1, England
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 195
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Vacuum Industrial Applications, Ltd., Netherton Rd., Wishaw, Lanarkshire, Scotland

VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
WESTINGHOUSE ELECTRIC CORP., ELECTRONIC TUBE DIV., Box 284, Elmira, N. Y. ADV. PG. 113

CHAMBERS—Ionization, Neutron Sensitive

Aerojet-General Nucleonics, San Ramon, Calif.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
Isotope Developments Ltd., Boonham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JORDAN ELECTRONICS A DIV. OF THE VICTOREEN INSTRUMENT CO., 3025 W. Mission Rd., Alhambra, Calif. ADV. PG. 188, 189
Landsverk Electrometer Co., 550-552 W. Garfield Ave., Glendale 4, Calif.
Neutronics Laboratory, Tinley Park, Ill.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Selas-Schell, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Vacuum Industrial Applications, Ltd., Netherton Rd., Wishaw, Lanarkshire, Scotland
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
WESTINGHOUSE ELECTRIC CORP., ELECTRONIC TUBE DIV., Box 284, Elmira, N. Y. ADV. PG. 113

CHARGES—Dosimeter

See DOSIMETER CHARGERS

CHELATING AGENTS

See DECONTAMINANTS

CHEMICALS

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Aloe Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
Baker & Adamson Products, General Chemical Div. of Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
Baker Chemical Co., J. T., Phillipsburg, N. J.
Barium & Chemicals, Inc., Willoughby, Ohio
Basic, Inc., Hanna Bldg., Room 845, Cleveland 14, Ohio
Bark & Co., Inc., P. W., Park Place East, Wood Ridge, N. J.
Bios Laboratories, Inc., 17 W. 60th St., New York 23, N. Y.
Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
Brem Chemical Co., Metallurgical-Chemical Div., 820 63th Ave., Philadelphia 26, Pa.
Brush Beryllium Co., 4301 Perkins Ave., Cleveland 3, Ohio
Cal-Rad Inc., 1208 W. Burbank Blvd., Burbank, Calif.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Chemical Commerce, 166 Clifford St., Newark, N. J.
Chicago Apparatus Co., 1735 N. Ashland Ave., Chicago 22, Ill.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Dajac Laboratories, The Borden Co., Chemical Div., Leominster, Mass.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Dow Chemical Co., Midland, Mich.
Dow Corning Corp., Midland, Mich.
DU PONT DE NEMOURS & CO., INC., E. I., Wilmington 98, Del. ADV. PG. 10
Eastern Chemical Corp., 34 Spring St., Newark 4, N. Y.
Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
General Biochemicals Inc., Laboratory Park, Chagrin Falls, Ohio
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
Hooker Electrochemical Co., 4721 Buffalo Ave., Niagara Falls, N. Y.
Hooper Chemical Corp., P. O. Box 313, Rutherford, N. J.
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Kawecki Chemical Co., Inc., 220 E. 42nd St., New York, N. Y.
Kennametal, Inc., Latrobe, Pa.
Kessler Chemical Co., Inc., State Rd., & Cottman Ave., Philadelphia 35, Pa.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Matheson Co., 932 Paterson Plank Rd., East Rutherford, N. J.
Maywood Chemical Works, 111 W. Hunter Ave., Maywood, N. J.
Merck & Co., Inc., Chemical Div., 857 Lincoln Ave., Rahway, N. J.
Merck & Co., Ltd., 560 De Courcelle St., Montreal 3, P. Q., Canada
Metal & Thermit Corp., Rahway, N. J.
Monsanto Chemical Co., Inorganic Chemical Div., 710 N. 12th Blvd., St. Louis 1, Mo.
Monsanto Chemical Co., Plastics Div., 600 Monsanto Ave., Springfield 2, Mass.
NORTON CO., 1 New Bond St., Worchester 6, Mass. ADV. PG. 37
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Oakite Products, Inc., 19 Rector St., New York 6, N. Y.
Orlando Research Inc., P. O. Box 6491, Orlando, Fla.
Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.
Pfizer & Co., Inc., Charles, Chemical Sales Div., 630 Flushing Ave., Brooklyn 6, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
PILOT CHEMICALS, INC., 36 Pleasant St., Watertown 72, Mass. ADV. PG. 187
Rem Chemicals, Inc., 200 E. Olive St., Gardena, Calif.
Reichhold Chemicals, Inc., 525 N. Broadway, White Plains, N. Y.
Rohm & Haas Co., Washington Square, Philadelphia 5, Pa.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.
SINGLE CRYSTAL CORP. OF AMERICA, RD1, Saxonburg Blvd., Saxonburg, Pa. ADV. PG. 178
Titanium Zirconium Co., Inc., Flemington, N. J.
TURCO PRODUCTS, INC., 6135 S. Central Ave., Los Angeles 1, Calif. ADV. PG. 161
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vanadium Corp. of America, Graybar Bldg., 420 Lexington Ave., New York 17, N. Y.
Ver-Loc-Oid Chemical Co., 116 Broad St., New York 4, N. Y.
Victor Chemical Works, 155 N. Wacker Drive, Chicago, Ill.
Will Corp., Box 1050, Rochester 3, N. Y.
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120

CHEMICALS—Labeled

See ISOTOPE—LABELED COMPOUNDS

CHOKES—Filter

See INDUCTANCES

CHROMATOGRAPHIC APPARATUS

Aloe Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Bristol Co., P. O. Box 1790 HBQ, Waterbury 20, Conn.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Chicago Apparatus Co., 1735 N. Asland Ave., Chicago 22, Ill.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Kontes Glass Co., Dept. P-159, Vineland, N. J.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
PACKARD INSTRUMENT CO., INC., P. O. Box 428, La Grange, Ill. ADV. PG. 213
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Research Specialties Co., 2005 Hopkins St., Berkeley 7, Calif.
Scientific Instruments Div. of Beckman Instruments, Inc., Fullerton, Calif.
Sorvall, Inc., Ivan, P. O. Box 230, Pearl St., Norwalk, Conn.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Spinco Div. of Beckman Instruments, Inc., 1117 California Ave., Palo Alto, Calif.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
Will Corp., Box 1050, Rochester 3, N. Y.

CIRCUITS—Packaged

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 44A-44D
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Allegany Instrument Co., Inc., Cumberland, Md.
Associated Engineering Corp., 65 Kent St., Brookline 46, Mass.
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Centralab Div., Globe-Union Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Dovco Engineering, Inc., P. O. Box 387, Caldwell, N. J.
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
Engineered Electronics Co., 506 E. First St., Santa Ana, Calif.
Goodyear Aircraft Corp., 1210 Massillon Rd., Akron 15, Ohio
Gulton Industries, Durham Ave., Metuchen, N. J.
Industrial Condenser Corp., 3243 N. California Ave., Chicago 18, Ill.
Jeffers Electronics Div., Speer Carbon Co., DuBois, Pa.
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Martin Co., The, Nuclear Div., Baltimore 3, Md.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Navigation Computer Corp., 1621 Snyder Ave., Philadelphia 45, Pa.
Panellit, Inc., 7401 N. Hamlin Ave., Skokie, Ill.
PARSONS CO., RALPH M., ELECTRONICS DIV., 181 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Speer Carbon Co., St. Marys, Pa.
Sprague Electric Co., North Adams, Mass.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Watkins Co., The, 141 W. Hazel St., Inglewood 3, Calif.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

CIRCUITS—Printed, Stamped or Etched

Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
Advance Instrument Corp., 1109 Sixth Ave., Neptune, N. J.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Beck's, Inc., 298-300 E. Fifth St., St. Paul 1, Minn.

Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Canaga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Centralab Div. of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Chicago Aerial Industries, Inc., 1900 Hawthorne Ave., Melrose Park, Ill.
Chisholm-Ryder Corp., Plastics & Electronics Div., 3800 Highland Ave., Niagara Falls, N. Y.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Dale Products, Inc., Columbus, Neb.
Daven Co., The, Route 10, Livingston, N. J.
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Engineered Electronics Co., 506 E. First St., Santa Ana, Calif.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Federal Telephone & Radio Co., A Div. of IT&T, 100 Kingsland Rd., Clifton, N. J.
Geldak Co., Inc., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
General Electric Co., Technical Products Dept., Electronics Park, Syracuse, N. Y.
Goodyear Aircraft Corp., 1210 Massillon Rd., Akron 15, Ohio
Gulton Industries, Durham Ave., Metuchen, N. J.
International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Magnavox Co., The, Fort Wayne, Ind.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Methode Mfg. Corp., 2021 W. Churchill St., Chicago 47, Ill.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
Sprague Electric Co., North Adams, Mass.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Techniques, Inc., P. O. Box 85, Hackensack, N. J.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.
Zenith Optical Lab., 1940 Great Neck Rd., Copiague, N. Y.

CLEANERS—Ultrasonic

See ULTRASONIC EQUIPMENT

CLEANERS—Vacuum

Breuer Electric Mfg. Co., 5100 N. Ravenswood Ave., Chicago 40, Ill.
Dayless Mfg. Co., 3527 N. Western Ave., Chicago, Ill.
Finnell System Inc., 800 East St., Elkhart, Ind.
HILD FLOOR MACHINE CO., 1217 W. Washington Blvd., Chicago, Ill. ADV. PG. 173
Lamson Corp., Syracuse 1, N. Y.
Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio
Pullman Vacuum Cleaner Corp., 25 Buick St., Boston 15, Mass.
U. S. Hoffman Machinery Corp., 103 Fourth Ave., New York, N. Y.

CLOTHING—Protective

American Optical Co., 28 Mechanic St., Southbridge, Mass.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Collier Mfg. Corp., Gainesville, Ga.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
General Scientific Equipment Co., 7516 Limekiln Pike, Philadelphia 50, Pa.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
Pittsburgh Plate Glass Co., 1 Gateway Center, Pittsburgh 22, Pa.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Standard Safety Equipment Co., 232 W. Ontario St., Chicago, Ill.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vorac Co., 147 Meadow Rd., Rutherford, N. J.
Workton, Inc., 253 W. 28th St., New York 1, N. Y.

COATINGS—Protective

Acheson Colloids Co., Div. of Acheson Industries, Inc., 1631 Washington Ave., Port Huron, Mich.
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.
American Agile Corp., P. O. Box 168, Bedford, Ohio
American Duraflim Co., Inc., 2300 Washington St., Newton Lower Falls, Mass.
American Products Mfg. Co., Inc., 8127-33 Oleander St., New Orleans 18, La.
Arco Co., 7301 Bessemer Ave., Cleveland 27, Ohio
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Bettinger Corp., Waltham, Mass.
Biggs Co., Carl H., 2255 Barry Ave., West Los Angeles 64, Calif.
Bisonite Co., Inc., P. O. Box 84, Kenmore Station, Buffalo 17, N. Y.
Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
Borolite Corp., 320 Yonkers Ave., Yonkers, N. Y.
Carboline Co., 32 Hanley Industrial Court, St. Louis 17, Mo.
Chicago Gasket Co., 1271 W. North Ave., Chicago 22, Ill.
Chromalloy Corp., 450 Tarrytown Rd., White Plains, N. Y.
Dow Chemical Co., Midland, Mich.
DU PONT DE NEMOURS & CO., INC., E. I., Wilmington 98, Del. ADV. PG. 10
Eagle-Picher Co., Cincinnati, Ohio
Electro Chemical Engineering & Mfg. Co., 750 N. Broad St., Emmaus, Pa.
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
Floquil Products, Inc., Cobleskill, N. Y.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hammel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
Inertol Co., Inc., 484-7 Frelinghuysen Ave., Newark 12, N. J.
Insul-Mastic Corp. of America, 7750 W. 61st Place, Summit, Ill.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Kendall Co., The, Polyken Sales Div., 309 W. Jackson Blvd., Chicago 6, Ill.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Maas & Waldstein Co., 2121 McCarter Highway, Newark 4, N. J.
Metal & Thermit Corp., Rahway, N. J.
Metallizing Engineering Co., 1101 Prospect Ave., Westbury, N. Y.
Micro-Circuits Co., New Buffalo, Mich.
Minnesota Mining & Mfg. Co., Jersey City Chemical Div., 75 Dreyers St., Jersey City 3, N. J.
Monsanto Chemical Co., Inorganic Chemical Div., 710 N. 12th Blvd., St. Louis 1, Mo.
Moore & Co., Samuel, Mantua, Ohio
National Lead Co., 111 Broadway, New York 6, N. Y.
NORTON CO., 1 New Bond St., Worcester 6, Mass. ADV. PG. 37
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Oakite Products, Inc., 19 Rector St., New York 6, N. Y.
Paisley Products, Inc., 630 W. 51st St., New York 19, N. Y.
Pancro Mirrors, Inc., 2958 Los Feliz Blvd., Los Angeles 39, Calif.
Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.
PERFECTION MICA CO., MAGNETIC SHIELD DIV., 1322 N. Elston Ave., Chicago 22, Ill. ADV. PG. 199
Philadelphia Quartz Co., 1146X Public Ledger Bldg., Philadelphia 6, Pa.
Pittsburgh Plate Glass Co., 1 Gateway Center, Pittsburgh 22, Pa.
Polymer Corp., The, Reading, Pa.
Proco Chemical Corp., Allen Blvd., Farmingdale, N. Y.
Ram Chemicals, Inc., 200 E. Olive St., Gardena, Calif.
Reilly Tar & Chemical Corp., 1615 Merchants Bank Bldg., 11 S. Meridan St., Indianapolis 4, Ind.
Sauereisen Cements Co., Sauereisen Bldg., Pittsburgh 15, Pa.
Siliconex Division, Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
SOLAR AIRCRAFT CO., 2200 Pacific Highway, San Diego 12, Calif. ADV. PG. 61
Sonneborn Sons, Inc., L., 404 Fourth Ave., New York 16, N. Y.
Sparta Mfg. Co., Div. of U. S. Ceramic Tile Co., Dover, Ohio
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Thermal Refractories Corp., 4301 Dell Ave., North Bergen, N. J.
Thermo Materials Inc., 4040 Campbell Ave., Menlo Park, Ill.
TURCO PRODUCTS, INC., 6135 S. Central Ave., Los Angeles 1, Calif. ADV. PG. 161
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Varnitan Co., 416 N. Varney St., Burbank, Calif.
Vorac Co., 147 Meadow Rd., Rutherford, N. J.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

COATINGS—Strippable

Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Bisonite Co., Inc., P. O. Box 84, Kenmore Station, Buffalo 17, N. Y.
Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
Carboline Co., 32 Hanley Industrial Court, St. Louis 17, Mo.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
DU PONT DE NEMOURS & CO., INC., E. I., Wilmington 98, Del. ADV. PG. 10
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
Maas & Waldstein Co., 2121 McCarter Highway, Newark 4, N. J.
Oakite Products, Inc., 19 Rector St., New York 6, N. Y.
Paisley Products, Inc., 630 W. 51st St., New York 19, N. Y.
Proco Chemical Corp., Allen Blvd., Farmingdale, N. Y.
Ram Chemicals, Inc., 200 E. Olive St., Gardena, Calif.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
TURCO PRODUCTS, INC., 6135 S. Central Ave., Los Angeles 1, Calif. ADV. PG. 161
U. S. Stoneware Co., Akron 9, Ohio
Vorac Co., 147 Meadow Rd., Rutherford, N. J.
Zophar Mills, Inc., 112-130 26th St., Brooklyn 32, N. Y.

COLLECTORS—Dust

American Air Filter Co., 215 Central Ave., Louisville 8, Ky.
American Blower Div., American Radiator & Standard Corp., 8111 Tireman Ave., Dearborn, Mich.
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Falstrom Co., 7 Falstrom Court, Passaic, N. J.
Fluor Products Co., 1200 E. Washington Blvd., Whittier, Calif.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
HILD FLOOR MACHINE CO., 1217 W. Washington Blvd., Chicago, Ill. ADV. PG. 173
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
METALS DISINTEGRATING CO., INC., P. O. Box 290, Elizabeth, N. J. ADV. PG. 205
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
Nash & Thompson Ltd., Oakcroft Rd., Chessington, Surrey, England
Torit Mfg. Co., Walnut & Exchange St., St. Paul, Minn.
U. S. Hoffman Machinery Corp., 103 Fourth Ave., New York 3, N. Y.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Yorzley & Co., 744 Broad St., Newark 2, N. J.

COLORIMETERS

Aloe Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
American Optical Co., Instrument Div., Box A, Buffalo 15, N. Y.
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Coleman Instruments, Inc., 318 Madison St., Maywood, Ill.
Cubic Corp., 5575 Kearny Villa Rd., San Diego 11, Calif.
Epic, 154 Nassau St., New York 38, N. Y.
Ercona Corp., 551 Fifth Ave., New York, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Instrument Development Lab., Inc., 67 Mechanic St., Attleboro, Mass.
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.

Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 150
Macbeth Instrument Corp., Little Britain Rd., Newburgh, N. Y.
Manufacturers Engineering & Equipment Corp., York & Mill Rds., Hatboro, Pa.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Minneapolis-Honeywell Regulator Co., Rubicon Instruments, Ridge Ave. at 35th St., Philadelphia 32, Pa.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Photovolt Corp., 95 Madison Ave., New York 16, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Scientific Instruments Div. of Beckman Instruments, Inc., Fullerton, Calif.
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.

COLUMNS—Absorption

Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Amersil Co., Inc., 683 Ramsey Ave., Hillside, N. J.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Doyle & Roth Mfg. Co., Inc., 136-50 24th St., Brooklyn 32, N. Y.
GRAVER TANK & MFG. CO., INC., 4809 Tod Ave., East Chicago, Ind. ADV. PG. 127
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Koven Fabricators, Inc., 90 E. Dickerson St., Dover, N. J.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
PACIFIC COAST ENGINEERING CO., Oak & Clement Sts., Alameda, Calif. ADV. PG. 116
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Pittsburgh Des Moines Steel Co., Pittsburgh 25, Pa.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Struthers-Wells Corp., Warren, Pa.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lanese, England
U. S. Stoneware Co., Akron 9, Ohio
Will Corp., Box 1050, Rochester 3, N. Y.

COLUMNS—Distilling, Fractionating, etc.

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Doyle & Roth Mfg. Co., Inc., 136-50 24th St., Brooklyn 32, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Fredericks Co., George E., Bethayres, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
General American Transportation Corp., 135 S. LaSalle, Chicago, Ill.
GRAVER TANK & MFG. CO., INC., 4809 Tod Ave., East Chicago, Ind. ADV. PG. 127
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Koven Fabricators, Inc., 90 E. Dickerson St., Dover, N. J.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
PACIFIC COAST ENGINEERING CO., Oak & Clement Sts., Alameda, Calif. ADV. PG. 116
Packed Column Corp., 30 Church St., New York 7, N. Y.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Pittsburgh Des Moines Steel Co., Pittsburgh 25, Pa.
Struthers-Wells Corp., Warren, Pa.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lanese, England
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
U. S. Stoneware Co., Akron 9, Ohio
Will Corp., Box 1050, Rochester 3, N. Y.

COLUMNS—Ion-Exchange

ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
Chem-Pure Service Co., 762 Industrial Rd., San Carlos, Calif.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
ELGIN SOFTENER CORP., 179 S. Grove Ave., Elgin, Ill. ADV. PG. 110
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Illinois Water Treatment Co., 858 Cedar St., Rockford, Ill.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Infilco, Inc., P. O. Box 5033, Tucson, Ariz.
Permutit Co., 50 W. 44th St., New York 36, N. Y.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lanese, England
U. S. Stoneware Co., Akron 9, Ohio
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Will Corp., Box 1050, Rochester 3, N. Y.

COLUMNS—Solvent Extraction

ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Doyle & Roth Mfg. Co., Inc., 136-50 24th St., Brooklyn 32, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
General American Transportation Corp., 135 S. LaSalle, Chicago, Ill.
GRAVER TANK & MFG. CO., INC., 4809 Tod Ave., East Chicago, Ind. ADV. PG. 127
Koven Fabricators, Inc., 90 E. Dickerson St., Dover, N. J.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Pittsburgh Des Moines Steel Co., Pittsburgh 25, Pa.
Struthers-Wells Corp., Warren, Pa.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lanese, England
U. S. Stoneware Co., Akron 9, Ohio
Will Corp., Box 1050, Rochester 3, N. Y.

COMPARATOR—Densitometers

Aloe Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Applied Research Labs., P. O. Box 1710, Glendale 5, Calif.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Macbeth Instrument Corp., Little Britain Rd., Newburgh, N. Y.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
National Instrument Labs., Inc., 6108 Rhode Island Ave., Riverdale, Md.
National Spectrographic Labs, Inc., 6300 Euclid Ave., Cleveland 3, Ohio
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

COMPARATORS—Hydrogen Ion

Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
LaMotte Chemical Products Co., Chestertand, Md., U. S. A.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.

COMPARATORS—Micro Photometer

Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.

COMPOUNDS—High Vacuum Sealing

Biggs Co., Carl H., 2255 Barry Ave., West Los Angeles 64, Calif.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Delta Chemical Works, 21 W. 60th St., New York, N. Y.
Dow Corning Corp., Midland, Mich.
Houghton Laboratories, Inc., Houghton Ave., Olean, N. Y.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
KINNEY MFG. DIV. THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
NRC EQUIPMENT CORP., A SUB. OF NATIONAL RESEARCH CORP., 87 Charlemont St., Newton Highlands 61, Mass. ADV. PG. 32
Polymer Industries, Inc., Springdale, Conn.
Shell Oil Co., Lubricants Div., 50 W. 50th St., New York, N. Y.

COMPOUNDS—Labeled

See ISOTOPE LABELED COMPOUNDS

COMPRESSORS

Aldan Systems Co., Aldan Research Center, Westboro, Mass.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Beach-Russ Co., 50 Church St., New York 7, N. Y.
Brown Boveri Corp., 19 Rector St., New York 6, N. Y.
Carrier Corp., 300 S. Geddes St., Syracuse 1, N. Y.
Clark Bros. Co., Div. of Dresser Operations, Inc., Lincoln Ave. & Fifth St., Olean, N. Y.
Cornelius Co., 550 39th Ave., N. E., Minneapolis 21, Minn.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Fairchild Engine & Airplane Corp., Engine Div., Deer Park, N. Y.
Gast Mfg. Corp., 137 Hinkley St., Benton Harbor, Mich.
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Jay Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.
Kahlenberg Bros. Co., 12th & Monroe Sts., Two Rivers, Wis.
Keystone Compressor Co., 8417 Hagerman St., Philadelphia 36, Pa.
Kidde & Co., Inc., Walter, 377 Main St., Belleville 9, N. J.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Nash Engineering Co., 450 Wilson Rd., South Norwalk, Conn.
Nordberg Mfg. Co., Milwaukee, Wis.
Quincy Compressor Co., Quincy, Ill.
Schutte & Koerting Co., Cornwell Heights, Bucks County, Pa
SOLAR AIRCRAFT CO., 2200 Pacific Highway, San Diego 12, Calif. ADV. PG. 61
Sulzer Bros. Ltd., New York, 50 Church St., New York 7, N. Y.
Uranium Ore & Supply Co., 846 W. Lake St., Chicago 6, Ill.
Worthington Corp., Harrison, N. J.
York Corp., York, Pa.

COMPUTER ACCESSORIES

Amp, Incorporated, Harrisburg, Pa.
Associated Engineering Corp., 65 Kent St., Brookline 46, Mass.

Beck's, Inc., 298–300 E. Fifth St., St. Paul 1, Minn.
Belock Instrument Corp., 111–01 14th Ave., College Point, N. Y.
Benson-Lehner Corp., 11930 W. Olympic Blvd., Los Angeles 64, Calif.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Donner Scientific Co., 888 Galindo St., Concord, Calif.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Electronic Associates, Inc., Long Branch, N. J.
Electronic Engineering Co. of California, 1601 E. Chestnut St., Santa Ana, Calif.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London S. E. 13, England
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Hanson-Gorrill-Brian, Inc., 82 Hazel St., Glen Cove, N. Y.
Heath Co., Benton Harbor, Mich.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
LITTON INDUSTRIES, ELECTRONIC EQUIPMENTS DIV., 336 N. Foothill Rd., Beverly Hills, Calif. ADV. PG. 67
Magnavox Co., The Fort Wayne, Ind.
Magnetics Research Co., 255 Grove St., White Plains, N. Y.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Monroe Calculating Machine Co., Hanover Ave., Morris Plains, N. J.
Muirhead & Co., Ltd., Beckenham, Kent, England
Navigation Computer Corp., 1621 Snyder Ave., Philadelphia 45, Pa.
PARSONS CO., RALPH M., ELECTRONICS DIV., 151 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
Philbrick Researches, Inc., George, 230 Congress St., Boston 10, Mass.
Servomechanisms, Inc., 12500 Aviation Blvd., Hawthorne, Calif.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Standard Electric Time Co., 89 Logan St., Springfield 2, Mass.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Waltham Electronics Corp., 751 Main St., Waltham, Mass.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.
Zenith Optical Lab., 1940 Great Neck Rd., Copiague, N. Y.

COMPUTER SERVICES

See SERVICES

COMPUTERS—Analog

Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
Allegany Instrument Co., Inc., Cumberland, Md.
Atomic Laboratories, 3086 Claremont Ave., Berkeley, Calif.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Belock Instrument Corp., 111–01 14th Ave., College Point, N. Y.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
California Research Corp., 200 Bush St., San Francisco 4, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Chicago Aerial Industries, Inc., 1980 Hawthorne Ave., Melrose Park, Ill.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Donner Scientific Co., 888 Galindo St., Concord, Calif.
Electronic Associates, Inc., Long Branch, N. J.
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Federal Telephone & Radio Co., A Div. of IT&T, 100 Kingsland Rd., Clifton, N. J.
FORD INSTRUMENT CO., DIV. OF SPERRY-RAND CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 125
Gibbs Mfg. Co., N. Main St., Janesville, Wis.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Heath Co., Benton Harbor, Mich.
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Link Aviation, Inc., Binghamton, N. Y.
LITTON INDUSTRIES, ELECTRONIC EQUIPMENTS DIV., 336 N. Foothill Rd., Beverly Hills, Calif. AVD. PG. 67
Magnavox Co., Fort Wayne, Ind.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Nash & Thompson Ltd., Oakcroft Rd., Chessington, Surrey, England
Nordon Kotay Corp., Commerce Rd., Stamford, Conn.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
Pentron Corp., 777 S. Tripp, Chicago 24, Ill.
Philbrick Researches, Inc., George A., 230 Congress St., Boston 10, Mass.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Servomechanisms, Inc., 12500 Aviation Blvd., Hawthorne, Calif.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Standard Electric Time Co., 89 Logan St., Springfield 2, Mass.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Taller & Cooper, Inc., 75 Front St., Brooklyn, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Waltham Electronics Corp., 751 Main St., Waltham, Mass.
Wang Laboratories, Inc., 37 Hurley St., Cambridge 41, Mass.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

COMPUTERS—Digital

Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
Avco Mfg. Corp., Research & Advanced Development Div., 20 S. Union St., Lawrence, Mass.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Belock Instrument Corp., 111–01 14th Ave., College Point, N. Y.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Chicago Aerial Industries, Inc., 1980 Hawthorne Ave., Melrose Park, Ill.
Computer Control Co., Inc., 92 Broad St., Wellesley, Mass.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Datamatic Corp., 151 Needham St., Newton Highlands 61, Mass.
ElectroData Div. of Burroughs Corp., 460 Sierra Madre Villa, Pasadena, Calif.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Federal Telephone & Radio Co., A Div. of IT&T, 100 Kingsland Rd., Clifton, N. J.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
FORD INSTRUMENT CO., DIV. OF THE SPERRY-RAND CORP., 31–10 Thomson Ave., Long Island City 1, N. Y. ADV. PG. 125
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda, Md.
Librascope, Inc., 808 Western Ave., Glendale, Calif.
LITTON INDUSTRIES, ELECTRONIC EQUIPMENTS DIV., 336 N. Foothill Rd., Beverly Hills, Calif. AVD. PG. 67
Magnavox Co., Fort Wayne, Ind.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Monroe Calculating Machine Co., Hanover Ave., Morris Plains, N. J.
National Cash Register Co., The, Main & K Sts., Dayton, Ohio
Nordon Kotay Corp., Commerce Rd., Stamford, Conn.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
Pentron Corp., 777 S. Tripp, Chicago 24, Ill.
Potter Aeronautical Corp., Route 22, Union, N. J.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Ransom Research, P. O. Box 382, San Pedro, Calif.
Remington Rand Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y.
Royal McBee Corp., Port Chester, N. Y.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Taller & Cooper, Inc., 75 Front St., Brooklyn, N. Y.
Technitrol Engineering Corp., Emerald St. & Allegheny Ave., Philadelphia 34, Pa.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.
Waikirt Co., The, 141 W. Hazel St., Inglewood 3, Calif.
Waltham Electronics Corp., 751 Main St., Waltham, Mass.
Wang Laboratories, Inc., 37 Hurley St., Cambridge 41, Ill.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

CONCRETE—High Density

AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
CONCRETE FABRICATORS, INC., 568 Union Commerce Bldg., Cleveland 14, Ohio. ADV. PG. 208
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Intrusion-Prepakt, 568 Union Commerce Bldg., Cleveland 14, Ohio
METALS DISINTEGRATING CO., INC., P. O. Box 290, Elizabeth, N. J. ADV. PG. 205
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
Victor Chemical Works, 155 N. Wacker Drive, Chicago, Ill.

CONCRETE—Shielding

See SHIELDING

CONDENSERS

See POWER PLANT EQUIPMENT

CONSOLES AND CABINETS

Aerojet-General Nucleonics, San Ramon, Calif.
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
Amco Engineering Co., 7333 Ainslie St., Chicago 31, Ill.
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Bettinger Corp., Waltham, Mass.
BUD RADIO, INC., 2118 E. 55th St., Cleveland 3, Ohio. ADV. PG. 190
Electronic Engineering Co. of California, 1601 E. Chestnut St., Santa Ana, Calif.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairstrom Company, 7 Fairstrom Court, Passaic, N. J.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
General Electric Co., Technical Products Dept., Electronics Park, Syracuse, N. Y.
Hallicrafters, Inc., 4401 W. Fifth Ave., Chicago 24, Ill.
Hamilton Mfg. Co., Two Rivers, Wis.
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Hunter-Bristol Corp., Bristol, Pa.
Imhof, Ltd., Alfred, 112 New Oxford St., London, W. C. 1, England
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Labgear (Cambridge), Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Leland Instruments, Ltd., 22–23 Millbank, London, Westminster, S. W. 1, England
LENNARD CO., INC., P. M., 1 Hansen Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Lyon Metal Products, Inc., 10 Montgomery St., Aurora, Ill.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
Panellit, Inc., 7401 N. Hamlin Ave., Skokie, Ill.
Par-Metal Products Corp., 32–62 49th St., Long Island City 3, N. Y.
PARSONS CO., RALPH M., ELECTRONICS DIV., 151 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
Peerless Instrument Co., Inc., 90–15 Corona Ave., Elmhurst 73, N. Y.
Premier Metal Products Co., 337 Manida St., Bronx 59, N. Y.

Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Standard Electric Time Co., 89 Logan St., Springfield 2, Mass.
Universal Industrial Equipment Co., 1625 Paterson Plank Rd., Secaucus, N. J.
Watson Mfg. Co., Inc., Jamestown, N. Y.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

CONSULTING & ENGINEERING SERVICES—Radiation

See SERVICES

CONSULTING & ENGINEERING SERVICES—Reactor

See SERVICES

CONTAINERS—Metal

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
Amco Engineering Co., 7333 Ainslie St., Chicago 31, Ill.
Bernard-Franklin Co., Inc., 4155 E. Hadley St., Philadelphia 37, Pa.
Brooks & Perkins, Inc., 261 Constitution Ave., N. W., Washington 1, D. C.
Brown Morse Co., Muskegon, Mich.
Falstrom Company, 7 Falstrom Court, Passaic, N. J.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
General American Transportation Corp., 135 S. La Salle, Chicago, Ill.
General Metals, Inc., 358 Goldsboro St., P. O. Box 448, Greensboro, N. C.
GRAVER TANK & MFG. CO., INC., 4809 Tod Ave., East Chicago, Ind. ADV. PG. 127
HOKE, INC., 233 S. Dean St., Englewood, N. J. ADV. PG. 200
Hunt, Rodney Machine Co., 46 Mill St., Orange, Mass.
Imhof, Ltd., Alfred, 112 New Oxford St., London, W. C. 1, England
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Kovan Fabricators, Inc., 90 E. Dickerson St., Dover, N. J.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
National Lead Co., 111 Broadway, New York 6, N. Y.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
PERFECTION MICA CO., MAGNETIC SHIELD DIV., 1322 N. Elston Ave., Chicago 22, Ill. ADV. PG. 199
Pittsburgh Des Moines Steel Co., Pittsburgh 25, Pa.
Republic Steel Corp., 3100 E. 45th St., Cleveland 27, Ohio
Standard Railway Equipment Mfg. Co., 310 S. Michigan Ave., Chicago 4, Ill.
Superior Tube Co., Box 191, Norristown, Pa.
United Aircraft Products, Inc., 1116 Bolander, Dayton, Ohio
Universal Industrial Equipment Co., 1625 Paterson Plank Rd., Secaucus, N. J.
VECTOR ELECTRONIC CO., 3352 San Fernando Rd., Los Angeles 65, Calif. ADV. PG. 178
Warren Corp., 2901 Brighton Rd., Pittsburgh 12, Pa.
Watson Mfg. Co., Inc., Jamestown, N. Y.

CONTAINERS—Plastic

Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Allied Resinous Products Inc., Box 620 Conneaut, Ohio
American Agile Corp., P. O. Box 168, Bedford, Ohio
Armstrong Cork Co., Lancaster, Pa.
Collier Mfg. Co., Gainesville, Ga.
Continental-Diamond Fibre Corp., Newark, Del.
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230–11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
General American Transportation Corp., 135 S. La Salle, Chicago, Ill.
Goodyear Aircraft Corp., 1210 Massillon Rd., Akron 15, Ohio
Hoosier Tarpaulin & Canvas Goods Co., 1302 W. Washington Ave., Indianapolis 6, Ind.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Lohgeer (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
National Vulcanized Fibre Co., Wilmington 99, Del.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
Resdel Corp., P. O. Box 217, Rio Grande, N. J.
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
Townson & Mercer, Ltd., Croydon, Surrey, England
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Westlake Plastics Co., West Lenni Rd., Lenni Mills, Pa.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

CONTAINERS—Shielded

Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
Alpha Metals, Inc., 56 Water St., Jersey City 4, N. J.
AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
American Agile Corp., P. O. Box 168, Bedford, Ohio
Ames Metal Products, 4323 S. Western Ave., Chicago Ill.
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
BAR-RAY PRODUCTS, INC., 205 25th St., Brooklyn 32, N. Y. ADV. PG. 73
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
E. R. D. Engineering Co., Ltd., Ipswich Rd., Slough, Buckinghamshire, England
Edlow Lead Co., 729 Bank St., Columbus 16, Ohio
Farrell-Birmingham Co., Inc., Ansonia, Conn.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
General Lead Construction Corp., 1800 Harrison Ave., Kearny, N. J.
General Radiological Ltd., 15–18 Clipstone St., London, W. 1, England
Hallett Mfg. Co., 5910 Bowcroft Ave., Los Angeles 16, Calif.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotope Accessories Co., Box 9534, Philadelphia 39, Pa.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
National Lead Co., 111 Broadway, New York 6, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Engineering, Ltd., Greenwich Metal Works, London, S. E. 7, England
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PACIFIC COAST ENGINEERING CO., Oak & Clement Sts., Alameda, Calif. ADV. PG. 116
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
Pittsburgh Des Moines Steel Co., Pittsburgh 25, Pa.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
Standard Railway Equipment Mfg. Co., 310 S. Michigan Ave., Chicago 4, Ill.
Telestro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50

CONTROL ROD DRIVE MECHANISMS

See REACTOR CONTROL RODS

CONTROL ROD DRIVE SYSTEMS

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 44A–44D
Adler Electronics, Inc., 1 La Porte Lane, New Rochelle, N. Y.
Advance Instrument Corp., 1109 Sixth Ave., Neptune, N. J.
Aerojet-General Nucleonics, San Ramon, Calif.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
FORD INSTRUMENT CO., DIV. OF SPERRY-RAND CORP., 31–10 Thomson Ave., Long Island 1, N. Y. ADV. PG. 125
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 34, 35
General Regulator Corp., 165 Broadway, New York 6, N. Y.
Kaantz-Wagner Electric Co., N. Michigan & Marion, South Bend, Ind.
L & S MACHINE CO., INC., P. O. Box 317, R. D. #2, Latrobe, Pa. ADV. PG. 57
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
MARVEL-SCHEBLER PRODUCTS DIV. OF BORG-WARNER CORP., Decatur, Ill. ADV. PG. 600
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
Peerless Instrument Co., Inc., 90–15 Corona Ave., Elmhurst 73, N. Y.
Penn-Texas Corp., Nuclear Engineering Div., 730 Fifth Ave., New York 19, N. Y.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Stow Mfg. Co., 355 Shear St., Binghamton, N. Y.
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
UNITED SHOE MACHINERY CORP., ATOMIC POWER DEPT., RESEARCH DIV., Beach St., Beverly, Mass. ADV. PG. 107
Western Gear Corp., General Offices, P. O. Box 182, Lynwood, Calif.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Westinghouse Electric Corp., Atomic Equipment Div., Cheswick, Pa.

CONTROL RODS

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 44A–44D
Aerojet-General Nucleonics, San Ramon, Calif.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Regulator Corp., 165 Broadway, New York 6, N. Y.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
Sintercast Corp. of America, 134 Woodworth Ave., Yonkers, N. Y.
Superior Tube Co., Box 191, Norristown, Pa.
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

CONTROLLERS—Proportioning

Advanced Instruments, Inc., 21–91 Oakcrest Rd., Needham, Boston 92, Mass.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Allegany Instrument Co., Inc., Cumberland, Md.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Assembly Products, Inc., Chesterland 6, Ohio
B-I-F Industries, Inc., 530–D Harris Ave., Providence 1, R. I.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brooks Rotameter Co., Box 432, Lansdale, Pa.

Electronic Processes Corp., 2190 Folsom St., San Francisco 10, Calif.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Falk & Co., Ltd., M., Emsfco House, Bell St., Reigate (Surrey), England
Fenwal, Inc., Ashland, Mass.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Lapp Insulator Co., Inc., 40 Gilbert St., LeRoy, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Potter Aeronautical Corp., Route 22, Union, N. J.
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
Ray Co., Milton, 1300 E. Mermaid Lane, Philadelphia 18, Pa.
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Superior Electric Co., 83 Laurel St., Bristol, Conn.
Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio
Therma Electric Mfg. Co., 465 Huff, Dubuque, Iowa
West Instrument Corp., 4363 W. Montrose Ave., Chicago 41, Ill.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

CONTROL PANELS

See CONSOLES and CABINETS

CONTROLS—Film Thickness

See GAGES—Thickness, Nonradioactivity
GAGES—Thickness or Density, Radioactivity

CONTROLS—Fluid Flow

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Atlas Valve Co., 260 South St., Newark 5, N. J.
Automatic Switch Co., Hanover Rd., Florham Park, N. J.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
B-I-F Industries, Inc., 930–D Harris Ave., Providence 1, R. I.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brooks Rotameter Co., Box 432, Lansdale, Pa.
Caltron Products Co., 1310–12 S. Hobart Blvd., Los Angeles 6, Calif.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Controls Co. of America, 2450 N. 32nd St., Milwaukee 45, Wis.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Davis Regulator Co., 2539 S. Wahtenaw, Chicago 2, Ill.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Iowa
Foster Engineering Co., 835 Lehigh Ave., Union, N. J.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Gems Co., P. O. Box 222, Newington, Conn.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hanna Engineering Works, 1767 N. Elston Ave., Chicago 22, Ill.
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Jordan Corp., Div. of OPW Corp., 4013 Wiehe Rd., Cincinnati 13, Ohio
Kay & MacDonald, Inc., 11–15 Central Ave., West Orange, N. J.
Kinney & Mueller Co., Inc., 64 Genung St., Middletown, N. Y.
Lapp Insulator Co., Inc., 40 Gilbert St., LeRoy, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Liberascope, Inc., 808 Western Ave., Glendale, Calif.
MAGNETROL INC., 2110 S. Marshall St., Chicago 23, Ill. ADV. PG. 191
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Nahatan St., Norwood, Mass.
Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Nash & Thompson Ltd., Oakcroft Rd., Chessington, Surrey, England
Nuclear Research Corp., Southampton, Pa.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Potter Aeronautical Corp., Route 22, Union, N. J.
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Revere Corp. of America, Wallingford, Conn.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio
United Aircraft Products, Inc., 1116 Bolander, Dayton, Ohio
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Warner Electronic Devices, Rankin, Ill.

CONTROLS—Humidity

Abbeon Supply Co., 179–15 Jamaica Ave., Jamaica 32, N. Y.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230–11 141st Ave. Springfield Gardens 13, N. Y. ADV. PG. 194
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
Isotope Products (Instrument Div.) Inc., Buffalo, N. Y.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Mason-Neilan, Nahatan St., Norwood, Mass.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Negretti & Zambra, Ltd., 122 Regent St., London, W. 1, England
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
Partlow Corp., The, Dept. NBG-58, New Hartford, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photobell Co., 43 Vesey St., New York 7, N. Y.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Serdex, Inc., 12 Bowdoin Square, Boston 14, Mass.
Surface Combustion Corp., Air Conditioning Div., 23 Dorr, Toledo 1, Ohio
Tri-R Instruments, 24–15 44th Rd., Long Island City 1, N. Y.
United Aircraft Products, Inc., 1116 Bolander, Dayton, Ohio
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Warner Electronic Devices, Rankin, Ill.

CONTROLS—Indicating, Millivoltmeter

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Assembly Products, Inc., Chesterland 6, Ohio
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Epic, 154 Nassau St., New York 38, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.
Illinois Testing Labs., 420 N. LaSalle St., Chicago, Ill.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Minneapolis-Honeywell Regulator Co., Rubicon Instruments, Ridge Ave. at 35th St., Philadelphia 32, Pa.
Neutronics Research Co., 165 Lake St., Waltham, Mass.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Potter Aeronautical Corp., Route 22, Union, N. J.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Therma-Electric Co., Inc., Rochelle Park Post Office, Saddle Brook, N. J.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
West Instrument Corp., 4363 W. Montrose Ave., Chicago 41, Ill.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

CONTROLS—Liquid Level

Acoustica Associates, Inc., 26 Windsor Rd., Mineola, N. Y.
Adler Electronics, Inc., 1 La Fevre Lane, New Rochelle, N. Y.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Airmec, Ltd., High Wycombe, Buckinghamshire, England
Alco Valve Co., 865 Kingsland Ave., St. Louis 5, Mo.
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Atlas Valve Co., 260 South St., Newark 5, N. J.
Autocall Co., Shelby, Ohio
Automatic Timing & Controls, Inc., King of Prussia, Pa.
B/W Controller Corp., 2200 E. Maple Rd., Birmingham, Mich.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brooks Rotameter Co., Box 432, Lansdale, Pa.
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Clark Mfg. Co., 1830 E. 38th St., Cleveland 14, Ohio
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Controls Co. of America, 2450 N. 32nd St., Milwaukee 45, Wis.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Davis Regulator Co., 2539 W. Wahtenaw, Chicago 2, Ill.
Daltron, Inc., 2905 N. Leithgow St., Philadelphia 33, Pa.
Dietz Co., Henry G., 12–16 Astoria Blvd., Long Island City 2, N. Y.
Electronic Control Corp., 1573 E. Forest St., Detroit 7, Mich.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fairchild Camera & Instrument Corp., Reconnaissance

Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fieldon Electronics Ltd., Paston Rd., Whytenshawe, Manchester, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Iowa
Foster Engineering Co., 835 Lehigh Ave., Union, N. J.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fulton Syphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Gems Co., P. O. Box 222, Newinton, Conn.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gulton Industries, Durham Ave., Metuchen, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Haloby Electronics Co., 57 William St., New York 5, N. Y.
HAYS CORP., Michigan City 39, Ind. ADV. PG. 183
Instruments,, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotope Developments Ltd., Boenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Johnson Corp., 809 Wood St., Three Rivers, Mich.
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
JORDAN ELECTRONICS A DIV. OF THE VICTOREEN INSTRUMENT CO., 3025 W. Mission Rd., Alhambra, Calif. ADV. PG. 188, 189
Kieley & Mueller Co., Inc., 64 Genung St., Middletown, N. Y.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Lunkenheimer Co., The, Beakman St. & Waverly Ave., Cincinnati 14, Ohio
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
MAGNETROL INC., 2110 S. Marshall St., Chicago 23, Ill. ADV. PG. 191
Marine Electric Corp., 600 Fourth Ave., Brooklyn, N. Y.
Mason-Neilan, Nahatan St., Norwood, Mass.
Measurement Engineering, Ltd., Ampriar, Ontario, Canada
Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
NARDA ULTRASONICS CORP., THE, Sub. of the Narda Microwave Corp., 158 Herricks Rd., Mineola, N. Y. ADV. PG. 121.
Negretti & Zambra, Ltd., 122 Regent St., London, W. 1, England
Nuclear Research Corp., Southampton, Pa.
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Phoenix Precision Instrument Co., 3803-05 N. 5th St., Philadelphia, Pa.
Photobell Co., 43 Vesley St., New York 7, N. Y.
Photoswitch Div. of Electronics Corp. of America, 1 Memorial Drive, Cambridge 42, Mass.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Revere Corp. of America, Wallingford, Conn.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Ruggles-Klingemann Mfg. Co., Salem, Mass.
Sarco Co., Inc., 350 Fifth Ave., New York 1, N. Y.
Scully Signal Co., Melrose, Mass.
Simmonds Aerocessories Inc., 105 White Plains Rd., Tarrytown, N. Y.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
Trimount Instrument Co., 3119 W. Lake St., Chicago 12, Ill.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Warner Electronic Devices, Rankin, Ill.

CONTROLS—Pressure

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
Alco Valve Co., 865 Kingsland Ave., St. Louis 5, Mo.
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Atlas Valve Co. 280 South St., Newark 5, N. J.
Autocall Co., Shelby, Ohio
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Burton Mfg. Co., 2520 Colorado Ave., Santa Monica, Calif.
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Cash Valve Mfg. Corp., A. W., 666 E. Wabash Ave., Decatur, Ill.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Copes-Vulcan Div. of Blaw-Knox Co., 939 W. 26th St., Erie, Pa.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Davis Regulator Co., 2539 W. Wahtenaw, Chicago 2, Ill.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Dietz Co., Henry G., 12-16 Astoria Blvd., Long Island City 2, N. Y.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Edison Industries, Thomas A., Instrument Div., West Orange, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fieldon Electronics Ltd., Paston Rd., Whytenshawe, Manchester, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Iowa
Foster Engineering Co., 835 Lehigh Ave., Union, N. J.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fredericks Co., George E., Bethayres, Pa.
Fulton Syphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Giannini & Co., G. M., 918 Green St., Pasadena Calif.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hammel-Dahl Co., Warwick Industrial Park, Providence 5, R. I.
Hanna Engineering Works, 1767 N. Elston Ave., Chicago 22, Ill.
Hastings-Raydist, Inc., Newcomb Ave., Hampton, Va.
HAYS CORP., Michigan City 39, Ind. ADV. PG. 183
Johnson Service Co., 507 E. Michigan St., Milwaukee, Wis.
Jordan Corp., Div. of OPW Corp., 6013 Wiehe Rd., Cincinnati 13, Ohio
Kay & MacDonald, Inc., 11-15 Central Ave., West Orange, N. J.
Kieley & Mueller Co., Inc., 64 Genung St., Middletown, N. Y.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Nahatan St., Norwood, Mass.
Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Nash & Thompson Ltd., Oakcroft Rd., Chessington, Surrey, England
Negretti & Zambra, Ltd., 122 Regent St., London, W. 1, England
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Pentron Corp., 777 S. Tripp, Chicago 24, Ill.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Ruggles-Klingemann Mfg. Co., Salem, Mass.
SOLAR AIRCRAFT CO., 2200 Pacific Highway, San Diego 12, Calif. ADV. PG. 61
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio
Ultradyne Engineering Labs. Inc., P. O. Box 3308, Albuquerque, N. M.
United Aircraft Products, Inc., 1116 Bolander, Dayton, Ohio
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Vickers Inc., Div. of Sperry-Rand Corp., Marine & Ordnance Dept., Waterbury 20, Conn.
Watts Regulator Co., 10 Embankment St., Lawrence, Mass.
Weksler Thermometer Corp., 195 E. Merrick Rd., Freeport, N. Y.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.

CONTROLS—Remote

Advance Instrument Corp., 1109 Sixth Ave., Neptune, N. J.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Anatron Div., Endevco Corp., 161 E. California, Pasadena, Calif.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Atlas Valve Co., 260 South St., Newark 5, N. J.
Automatic Switch Co., Hanover Rd., Florham Park, N. J.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Automotive & Aircraft Div., American Chain & Cable Co., Inc., 601 Stephenson Bldg., Detroit, Mich.
B-I-F Industries, Inc., 830-D Harris Ave., Providence 1, R. I.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Belock Instrument Corp., 111-01 14th Ave., College Point, N. Y.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brooks Rotameter Co., Box 432, Lansdale, Pa.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Copes-Vulcan Div. of Blaw-Knox Co., 939 W. 26th St., Erie, Pa.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Daven Co., The, Route 10, Livingston, N. J.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Elm Laboratories, 10 Washington Ave., Hastings-on-Hudson, N. Y.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., 5 Aerial Way, Syosset, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Iowa
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fulton Syphon Div., Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Gems Co., P. O. Box 222, Newinton, Conn.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Precision Laboratory, Inc., 63 Bedford Rd., Pleasantville, N. Y.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
HAYS CORP., Michigan City 39, Ind. ADV. PG. 183
Kieley & Mueller Co., Inc., 64 Genung St., Middletown, N. Y.
Kuprian Mfg. Corp., 395 State St., Binghamton, N. Y.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Litton Industries, Maryland Div., 4910 Calvert Rd., College Park, Md.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
MAGNETROL INC., 2110 S. Marshall St., Chicago 23, Ill. ADV. PG. 191
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Nahatan St., Norwood, Mass.
Measurement Engineering, Ltd., Ampriar, Ontario, Canada
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Nucledyne Corp., Sub. of Cook Electric Co., 8100 N. Monticello Ave., Skokie, Ill.

Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Servo-Tek Products Co., 1086 Goffle Rd., Hawthorne, N. J.
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Stewart Corp., F. W., 4311–13 Ravenswood Ave., Chicago 13, Ill.
Stow Mfg. Co., 385 Shear St., Binghamton, N. Y.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio
Taller & Cooper, Inc., 75 Front St., Brooklyn, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thompson Products, Inc., 2196 Clarkwood Ave., Cleveland 3, Ohio
Trimount Instrument Co., 2119 W. Lake St., Chicago 12, Ill.
U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.
Watts Regulator Co., 10 Embankment St., Lawrence, Mass.
West Instrument Corp., 4363 W. Montrose Ave., Chicago 41, Ill.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
White Dental Mfg. Co., S. S., 10 E. 40th St., New York 16, N. Y.
Warner Electronic Devices, Rankin, Ill.

CONTROLS—Specific Gravity

Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brooks Rotometer Co., Box 432, Lansdale, Pa.
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotope Products (Instrument Div.) Inc., Buffalo, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Nuclear Research Corp., Southampton, Pa.
Ohmart Corp., 2236 Begen St., P. O. Box 67, Sta. S, Cincinnati 22, Ohio
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Warner Electronic Devices, Rankin, Ill.

CONTROLS—Temperature

Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Airmec Ltd., High Wycombe, Buckinghamshire, England
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Assembly Products, Inc., Chesterland 6, Ohio
Atlas Valve Co., 280 South St., Newark 5, N. J.
Autocall Co., Shelby, Ohio
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Burling Instrument Co., Inc., 16 River Rd., Chatham, N. J.
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Control Products, Inc., 306 Sussex St., Harrison, N. J.
Controls Co. of America, 2450 N. 32nd St., Milwaukee 45, Wis.
Copes-Vulcan Div. of Blaw-Knox Co., 939 W. 26th St., Erie, Pa.
Cox & Co., Inc., 115 E. 23rd St., New York 10, N. Y.
Cutler-Hammer Inc., 412 N. 12th St., Milwaukee 1, Wis.
Deltron, Inc., 2905 N. Leithgow St., Philadelphia 23, Pa.
Devco Engineering, Inc., P. O. Box 387, Caldwell, N. J.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
DYNA-EMPIRE, INC., 1075 Stewart Ave., Garden City, N. Y. ADV. PG. 197
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Edison Industries, Thomas A., Instrument Div., West Orange, N. J.
Electronic Control Corp., 1373 E. Forest St., Detroit 7, Mich.
Electronic Processes Corp., 2190 Folsom St., San Francisco 10, Calif.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Epic, 154 Nassau St., New York 38, N. Y.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Falk & Co., Ltd., M., Emefco House, Bell St., Reigate (Surrey) England
Fenwal Inc., 120 Pleasant St., Ashland, Mass.
Flaiden Electronics Ltd., Paston Rd., Whytenshawe, Manchester, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORD INSTRUMENT CO., DIV. OF SPERRY-RAND CORP., 31–10 Thompson Ave., Long Island City, N. Y. ADV. PG. 125
Foster Engineering Co., 835 Lehigh Ave., Union, N. J.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.
H-B Instrument Co., American & Bristol St., Philadelphia 40, Pa.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hammel-Dahl Co., Warwick Industrial Park, Providence 5, R. I.
HAYS CORP., Michigan City 39, Ind. ADV. PG. 183
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Illinois Testing Labs., 420 N. LaSalle St., Chicago, Ill.
Johnson Service Co., 907 E. Michigan St., Milwaukee 1, Wis.
Jordan Corp., Div. of OPW Corp., 6013 Wiehe Rd., Cincinnati 13, Ohio
Kay Electric Co., 14 Maple Ave., Pine Brook, N. J.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Monsen Laboratories, Inc., 207 Greenwich Ave., Stamford, Conn.
Mason-Neilan, Nahatan St., Norwood, Mass.
Measurement Engineering, Ltd., Ampriar, Ontario, Canada
Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Metals & Controls Corp., Spencer Thermostat Div., 40 Forest St., Attleboro, Mass.
Meters, Inc., 5353 H. Keystone Ave., Indianapolis 20, Ind.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Boston Div., 1400 Soldiers Field Rd., Boston 35, Mass.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Minneapolis-Honeywell Regulator Co., Rubicon Instruments, Ridge Ave. at 35th St., Philadelphia 32, Pa.
Modern Laboratory Equipment Co., 1809–11 First Ave., New York 28, N. Y.
Negretti & Zambra, Ltd., 122 Regent St., London, W. 1, England
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
Nurnberg Thermometer Co., Inc., 124 Livingston St., Brooklyn, N. Y.
Partlow Corp., The, Dept. NBG-58, New Hartford, N. Y.
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Process & Instruments, 15 Stone Ave., Brooklyn 22, N. Y.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Revere Corp. of America, Wallingford, Conn.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Ruge Associates, Inc., Arthur C., 733 Concord Ave., Cambridge 38, Mass.
Sarco Co., Inc., 350 Fifth Ave., New York 1, N. Y.
Sordez, Inc., 12 Bowdoin Square, Boston 14, Mass.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Simpson Electric Co., Div. of American Gage & Machine Co., 5200 W. Kinzie St., Chicago 44, Ill.
SOLAR AIRCRAFT CO., 2200 Pacific Highway, San Diego 12, Calif. ADV. PG. 61
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Stevens Mfg. Co., Inc., P. O. Annex 1007, Mansfield, Ohio
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Therma-Electric Co., Inc., Rochelle Park Post Office, Saddle Brook, N. J.
Thermo Electric Mfg. Co., 465 Huff, Dubuque, Iowa
Thwing-Albert Instrument Co., Penn St. & Pulaski Ave., Philadelphia 44, Pa.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancas, England
Tri-R Instruments, 24–15 44th Rd., Long Island City 1, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Ulanet Co., George, 413 Market St., Newark 5, N. J.
United Aircraft Products, Inc., 1116 Selander, Dayton, Ohio
Victory Engineering Corp., 77 Springfield Rd., Union, N. J.
Weksler Thermometer Corp., 195 E. Merrick Rd., Freeport, N. Y.
West Instrument Corp., 4363 W. Montrose Ave., Chicago 41, Ill.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio

CONTROLS—Timing

See also TIMERS

Abrams Instrument Corp., 600–620 E. Shiawassee St., Lansing, Mich.
Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Advanced Products Co., 59 Broadway, North Haven, Conn.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Alden Systems Co., Alden Research Center, Westboro, Mass.
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Amglo Corp., 4333 Ravenswood Ave., Chicago 13, Ill.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bolock Instrument Corp., 111–01 14th Ave., College Point, N. Y.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Canadian Applied Research, Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Controls Co. of America, 2450 N. 32nd St., Milwaukee 45, Wis.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cramer Controls Corp., Box 83, Centerbrook, Conn.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Davtron Engineering, 1 Winslow St., Redwood City, Calif.
Dietz Co., Henry G., 12–16 Astoria Blvd., Long Island City 2, N. Y.
Eagle Signal Corp., 202 20th St., Moline, Ill.

Edison Industries, Thomas A., Instrument Div., West Orange, N. J.
Electronic Control Corp., 1573 E. Forest St., Detroit 7, Mich.
Electronic Processes Corp., 2190 Folsom St., San Francisco 10, Calif.
Elm Laboratories, 10 Washington Ave., Hastings-on-Hudson, N. Y.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Federal Telephone & Radio Co., A Div. of IT&T, 100 Kingsland Rd., Clifton, N. J.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
General Control Company, 1200 Soldiers Field Rd., Boston 34, Mass.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hayden Co., A. W., The, 232 N. Elm St., Waterbury, Conn.
Hayden Mfg. Co., 245 E. Elm St., Torrington, Conn.
Industrial Timer Corp., 1407 McCarter Highway, Newark 4, N. J.
International Register Co., 2620 W. Washington Blvd., Chicago 12, Ill.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Mason-Neilan, Nahatan St., Norwood, Mass.
Measurement Engineering, Ltd., Ampriar, Ontario, Canada
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
Norman Laboratories, Ernst, Williams Bay, Wis.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Paragon Electric Co., Two Rivers, Wis.
Partlow Corp., The, Dept. NBG-58, New Hartford, N. Y.
Peerless Instrument Co., Inc., 90-15 Corona Ave., Elmhurst 73, N. Y.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
Ulanet Co., George, 413 Market St., Newark 5, N. J.
Vara Mfg. Co., Inc., 2201 Walnut St., Garland, Texas
Walkirt Co., The, 141 W. Hazel St., Inglewood 3, Calif.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Wilson & Co., G. C., 1915 Eighth Ave., Huntington, W. Va.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio

CONTROLS—Vacuum

Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
Askenia Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Cash Valve Mfg. Corp., A. W., 666 E. Wabash Ave., Decatur, Ill.
Central Electronic Manufacturers, Inc., 2 Richwood Place, Denville, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Consolidated Electrodynamics Corp., Rochester Div., 1775 Mt. Read Blvd., Rochester, N. Y.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Dietz Co., Henry G., 12-16 Astoria Blvd., Long Island City 2, N. Y.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Eitel-McCullough, Inc., San Bruno, Calif.
Electronics Research Labs., 85 Surrey St., Brighton 35, Mass.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foster Engineering Co., 835 Lehigh Ave., Union, N. J.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fredericks Co., George E., Bethayres, Pa.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hastings-Raydist, Inc., Newcomb Ave., Hampton, Va.
Heise Bourdon Tube Co., Inc., 1 Brook Rd., Newton, Conn.
Helicoid Gage Div., American Chain & Cable Corp., 929 Connecticut Ave., Bridgeport 2, Conn.
High Vacuum Equipment Corp., 2 Churchill Rd., Hingham, Mass.
Kinetics Corp., 2 Churchill Rd., Hingham, Mass.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
Kontes Glass Co., Dept. P-159, Vineland, N. J.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Mallory-Schwarzkopf Metals Inc., 320 Yonkers Ave., Yonkers, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Nahatan St., Norwood, Mass.
Marcold Corp., 4201 Belmont Ave., Chicago 41, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
NRC EQUIPMENT CORP., A SUB. OF NATIONAL RESEARCH CORP., 87 Charlemont St., Newton Highlands 61, Mass. ADV. PG. 32
Negretti & Zambra, Ltd., 122 Regent St., London, W. 1, England
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Research Vacuum Supply Co., 6712 N. Clark St., Chicago, Ill.
Resitron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
SCIENTIFIC ENGINEERING LABORATORY, 2229 Mc-Gee Ave., Berkeley, Calif. ADV. PG. 198
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
STOKES CORP., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 132
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Trimount Instrument Co., 3119 W. Lake St., Chicago 12, Ill.
United Aircraft Products, Inc., 1116 Bolander, Dayton, Ohio
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Vacuum Equipment Div. of The New York Air Brake Co., Admiral Wilson Blvd., Camden, N. J.
Vacuum Industrial Applications, Ltd., Netherton, Rd., Wishaw, Lanarkshire, Scotland
Vacuum Specialties Co., Inc., 34 Linden St., Somerville, Mass.
Vacuum Tube Products Co., Inc., 506 S. Cleveland St., Oceanside Calif.
Veeco Vacuum Corp., 86 Denton Ave., New Hyde Park, N. Y.
Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.
Weksler Thermometer Corp., 195 E. Merrick Rd., Freeport, N. Y.
Welch Scientific Co., W. M., 1515 Sedgwick Ave., Chicago 10, Ill.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.

CONTROLS—Viscosity

Automatic Timing & Controls, Inc., King of Prussia, Pa.
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Bendix Aviation Corp., Cincinnati Div., 3130 Wassen Rd., Cincinnati 8, Ohio
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Goertner Scientific Co., 1237 Wrightwood Ave., Chicago, Ill.

COOLANTS

See WATER—Heavy

COOLING TOWERS

See POWER PLANT EQUIPMENT

COUNTERS

See also G-M TUBES

COUNTERS—Alpha Sensitive

Aerojet-General Nucleonics, San Ramon, Calif.
Airmac Ltd., High Wycombe, Buckinghamshire, England
Alco Mfg. Co., 4011 Corning St., Omaha 3, Neb.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34-01 30th St., Long Island City 6, N. Y. ADV. PG. 181
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Dextran Engineering, 1 Winslow St., Redwood City, Calif.
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
Isomet Corp., 118 Union St., Palisades Park, N. J.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 133
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
Nuclear Aids Corp., 612 N. Michigan Ave., Chicago, Ill.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
NUCLEONIC CORP., OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Nucor Research, Inc., 2421 Wolcott, Ferndale, Mich.
PACKARD INSTRUMENT CO., INC., P. O. Box 428, La Grange, Ill. ADV. PG. 213
Precision Radiation Instruments, Inc., 4223 W. Jefferson Blvd., Los Angeles 16, Calif.
RADIATION COUNTER LABS., INC., 5132 W. Grove St., Skokie, Ill. ADV. PG. 29
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

COUNTERS—Beta Sensitive

Aerojet-General Nucleonics, San Ramon, Calif.
Airmac Ltd., High Wycombe, Buckinghamshire, England
Alco Mfg. Co., 4011 Corning St., Omaha 3, Neb.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34-01 30th St., Long Island City 6, N. Y. ADV. PG. 181
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Daystrom, Inc. Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Dextran Engineering, 1 Winslow St., Redwood City, Calif.
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
Eichner Instruments Co., L. C., 19 Sebago St., Clifton, N. J.
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.

El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
Isomet Corp., 118 Union St., Palisades Park, N. J.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Landsvark Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Menlo Research Laboratory, 538 Phelan Ave., San Jose, Calif.
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR-ELECTRONICS CORP., 2632–36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Nuclear Research Application Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 De Graw St., Brooklyn 37, N. Y. ADV. PG. 177, 203, 207
Nucor Research, Inc., 2421 Wolcott, Ferndale, Mich.
PACKARD INSTRUMENT CO., INC., P. O. Box 428, La Grange, Ill. ADV. PG. 213
Panax Equipment, Ltd., 173 London Rd., Micham, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Precision Radiation Instruments, Inc., 4223 W. Jefferson Blvd., Los Angeles 16, Calif.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Contronics Works, King Henry's Drive, New Addington, Surrey, England
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

COUNTERS—Binary or Decade

See SCALERS—Binary
SCALERS—Decade

COUNTERS—Electro-Mechanical

Abrams Instrument Corp., 600–620 E. Shiawassee St., Lansing, Mich.
Advance Electronics Lab., Inc., 249–259 Terhune Ave., Passaic, N. J.
Aldon Electronic & Impulse Recording Equipment Co., Westboro, Mass.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
Anatron Div., Endevco Corp., 161 E. California, Pasadena, Calif.
Arnold Magnetics Corp., 5962 Smiley Drive, Culver City, Calif.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Belock Instrument Corp., 111–01 14th Ave., College Point, N. Y.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cyclotron Specialties Co., Moraga 8, Calif.
Durant Mfg. Co., 1996 N. Buffum St., Milwaukee 1, Wis.
Eagle Signal Corp., 202 20th St., Moline, Ill.
Electric Tachometer Corp., 68th & Upland Sts., Philadelphia 42, Pa.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Federal Telephone & Radio Co., A Div. of IT&T, 100 Kingsland Rd., Clifton, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Freed Transformer Co., Inc., 1726 Weirfield St., Brooklyn 27, N. Y.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
LANDIS & GYR, INC., 45 W. 45th St., New York 36, N. Y. ADV. PG. 204
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
Photocon Research Products, 421 N. Foothill Blvd., Pasadena 7, Calif.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
Production Instrument Div. of General Controls Co., 8080 McCormick Blvd., Skokie, Ill.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Standard Electric Time Co., 89 Logan St., Springfield 2, Mass.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Tailor & Cooper, Inc., 75 Front St., Brooklyn, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Veeder-Root, Inc., 70 Sargeant St., Hartford 2, Conn.
Wang Laboratories, Inc., 37 Hurley St., Cambridge 41, Mass.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.

COUNTERS—Flow

Aerojet-General Nucleonics, San Ramon, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34–01 30th St., Long Island City 6, N. Y. ADV. PG. 181
Anatron Div., Endevco Corp., 161 E. California, Pasadena, Calif.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Automatic Timing & Controls, Inc., King of Prussia, Pa.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Computer-Measurements Corp., 5528 Vineland Ave., North Hollywood, Calif.
Cosmic Radiation Labs., Inc., 247 Blue Point Ave., Blue Point, N. Y.
Dovtron Engineering, 1 Winslow St., Redwood City, Calif.
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PACKARD INSTRUMENT CO., INC., P. O. Box 428, La Grange, Ill. ADV. PG. 213
Potter Aeronautical Corp., Route 22, Union, N. J.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
Revere Corp. of America, Wallingford, Conn.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Contronics Works, King Henry's Drive, New Addington, Surrey, England

COUNTERS—Gamma

Aerojet-General Nucleonics, San Ramon, Calif.
Airmec, Ltd., High Wycombe, Buckinghamshire, England
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34–01 30th St., Long Island City 6, N. Y. ADV. PG. 181
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Crystal Co., 1740 University Ave., Berkeley 3, Calif.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Dovtron Engineering, 1 Winslow St., Redwood City, Calif.
Diamond Power Specialty Corp., Lancaster, Ohio
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
Goldak Co., Inc., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isomet Corp., 118 Union St., Palisades Park, N. J.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Landsvark Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
Manufacturers Engineering & Equipment Corp., York & Mill Rds., Hatboro, Pa.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Menlo Research Laboratory, 538 Phelan Ave., San Jose, Calif.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR-ELECTRONICS CORP., 2632–36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CORP. OF AMERICA, 196 De Graw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Nucor Research, Inc., 2421 Wolcott, Ferndale, Mich.
Omco, U. S. 93 & Las Palomas St., Kingman, Ariz.
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Precision Radiation Instruments, Inc., 4223 W. Jefferson Blvd., Los Angeles 16, Calif.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
Reed Co., Inc., C. W., 3959 S. Hoover St., Los Angeles 44, Calif.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Twentieth Century Electronics Ltd., Contronics Works, King Henry's Drive, New Addington, Surrey, England
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
WESTINGHOUSE ELECTRIC CORP., ELECTRONIC TUBE DIV., Box 284, Elmira, N. Y. ADV. PG. 113
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145

X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

COUNTERS—G-M

See also G-M TUBES

Airmec, Ltd., High Wycombe, Buckinghamshire, England
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34–01 30th St., Long Island City 6, N. Y. ADV. PG. 181
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bruel & Kjaer, Naerum, Denmark
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Fisher Research Laboratory, Inc., Box 640, Palo Alto, Calif.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
Glass Engineering Laboratories, 601 O'Neil Ave., Belmont, Calif.
Goldak Co., Inc., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Heath Co., Benton Harbor, Mich.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
JORDAN ELECTRONICS A DIV. OF THE VICTOREEN INSTRUMENT CO., 3025 W. Mission Rd., Alhambra, Calif. ADV. PG. 188, 189
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
LEIGHTON LABS., H. W., York Rd. & Sunset Lane, Hatboro, Pa. ADV. PG. 182
Menlo Research Laboratory, 538 Phelan Ave., San Jose, Calif.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Precision Radiation Instruments, Inc., 4223 W. Jefferson Blvd., Los Angeles 16, Calif.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Uranium Ore & Supply Co., 546 W. Lake St., Chicago 6, Ill.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145

COUNTERS—Neutron Sensitive

Aerojet-General Nucleonics, San Ramon, Calif.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
Isomet Corp., 118 Union St., Palisades Park, N. J.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
Neutronics Laboratory Tinley Park, Ill.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR ENTERPRISES, LTD., 1750 Pembina Highway, Winnepeg, Canada. ADV. PG. 114
NUCLEONIC CORP. OF AMERICA, 196 De Graw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Nucar Research, Inc., 2421 Walcott, Ferndale, Mich.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Salus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
WESTINGHOUSE ELECTRIC CORP., ELECTRONIC TUBE DIV., Box 284, Elmira, N. Y. ADV. PG. 113
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145

COUNTERS—Probing, Medical

American Electronics, Inc., 655 W. Washington Blvd., Los Angles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34–01 30th St., Long Island City 6, N. Y. ADV. PG. 181
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
LEIGHTON LABS., H. W., York Rd. & Sunset Lane, Hatboro, Pa. ADV. PG. 182
Manufacturers Engineering & Equipment Corp., York & Mill Rds., Hatboro, Pa.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Read Co., Inc., C. W., 5959 S. Hoover St., Los Angeles 44, Calif.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145

COUNTERS—Proportional

Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
Aerojet-General Nucleonics, San Ramon, Calif.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Eagle Signal Corp., 202 20th St., Moline, Ill.
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR-ELECTRONICS CORP., 2632–36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PACKARD INSTRUMENT CO., INC., P. O. Box 428, La Grange, Ill. ADV. PG. 213
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
SOLAR AIRCRAFT CO., 2200 Pacific Highway, San Diego 12, Calif. ADV. PG. 61
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
VOLK RADIO CHEMICAL CO., 8412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
WESTINGHOUSE ELECTRIC CORP., ELECTRONIC TUBE DIV., Box 284, Elmira, N. Y. ADV. PG. 113
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

COUNTERS—Pulse

See SCALERS & COUNTERS—Electro-Mechanical

COUNTERS—Rate

See METERS—Count—Rate

COUNTERS—Scintillation

See also SCINTILLATORS—Crystal

Aerojet-General Nucleonics, San Ramon, Calif.
ALLIED RESEARCH ASSOCIATES, INC., 43 Leon St., Boston 15, Mass. ADV. PG. 192
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34–01 30th St., Long Island City, 6, N. Y. ADV. PG. 181
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Crystal Co., 1740 University Ave., Berkeley 3, Calif.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bruel & Kjaer, Naerum, Denmark
Chatham Electronics Div. of Tung-Sol Electric Inc., Livingston, N. J.

Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cosmic Radiation Labs., Inc., 247 Blue Point Ave., Blue Point, N. Y.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
E. R. D. Engineering Co., Ltd., Ipswich Rd., Slough, Buckinghamshire, England
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
Eichner Instruments Co., L. C., 19 Sebago St., Clifton, N. J.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 3 Aerial Way, Syosset, N. Y.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
General Nuclear Co., 4957 Hollywood Blvd., Hollywood 27, Calif.
Geldek Co., Inc., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Isomet Corp., 118 Union St., Palisades Park, N. J.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Meditronic Instruments, 4867 Fountain Ave., Hollywood 29, Calif.
Menlo Research Laboratory, 538 Phelan Ave., San Jose, Calif.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 133
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
Nuclear Research Corp., Southampton, Pa.
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PACKARD INSTRUMENT CO., INC., P. O. Box 428, La Grange, Ill. ADV. PG. 213
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
Precision Radiation Instruments, Inc., 4223 W. Jefferson Blvd., Los Angeles 16, Calif.
Quartz Products Corp., 688 Somerset St., Plainfield, N. J.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halstead St., Chicago 21, Ill. ADV. PG. 68
SOCIETE D'APPLICATIONS INDUSTRIELLES de la PHYSIQUE (S.A.I.P.), 146, Bd. de Charonne, Paris, France. ADV. PG. 196
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 195
Technical Measurement Corp., 140-142 State St., New Haven, Conn.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145

COUNTERS—X-Ray

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
Isomet Corp., 118 Union St., Palisades Park, N. J.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 133
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Philips Electronics Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St. Skokie, Ill. ADV. PG. 29
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

COUNTING RATE METERS

See METERS—Count—Rate

CRITICAL ASSEMBLY

See REACTORS

CRITICALITY HAZARD EVALUATION

See SERVICES

CRYOSTATS

Farnsworth Electronics Co., Div. of IT&T, Fort Wayne, Ind.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Fredericks Co., George E., Bethayres, Pa.
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
Townson & Mercer, Ltd., Croydon, Surrey, England

CRYSTALS—Scintillation

See SCINTILLATORS—Crystal

CYCLOTRONS

See ACCELERATORS—Particle

DECONTAMINANTS

ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230-11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
Dow Chemical Co., Midland, Mich.
Geigy Industrial Chemicals, Sawmill River Rd., Ardsley, N. Y.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Oakite Products, Inc., 19 Rector St., New York 6, N. Y.
Pioneer Central Division, Bendix Aviation Corp., Davenport, Iowa
TURCO PRODUCTS, INC., 6135 S. Central Ave., Los Angeles 1, Calif. ADV. PG. 161

DECONTAMINATION

See SERVICES

DEHUMIDIFIERS

Abbeon Supply Co., 179-15 Jamaica Ave., Jamaica 32, N. Y.
Air & Refrigeration Corp., 439 Madison Ave., New York 17, N. Y.
American Blower Div., American Radiator & Standard Corp., 8111 Tireman Ave., Dearborn, Mich.
Carrier Corp., 300 S. Geddes St., Syracuse 1, N. Y.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230-11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
Dow Chemical Co., Midland, Mich.
Ellis and Watts Products, Inc., Monroe at Spencer, Cincinnati 36 (Rossmoyne), Ohio
Industrial Corp., Div. of Trinity Equipment Corp., 472 Westfield Ave., E., Roselle Park, N. J.
Kahn & Co., Inc., 541 Windsor St., Hartford 1, Conn.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
LINDE CO., DIV. OF UNION CARBIDE CO., 30 E. 42nd St., New York 17, N. Y. ADV. PG. 184
Monsanto Chemical Co., Plastics Div., 600 Monsanto Ave., Springfield 2, Mass.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
Pittsburgh Lectrodryer Div. of McGraw-Edison Electric Co., 300 32nd St., Pittsburgh 30, Pa.
Remington Air Conditioning Div. of Remington Corp., Willey St., Auburn, N. Y.
Robbins Aviation, 1735 W. Florence Ave., Los Angeles 47, Calif.
Ray Co., Milton, 1300 E. Mermaid Lane, Philadelphia 18, Pa.
Surface Combustion Corp., Air Conditioning Div., 23 Dorr, Toledo 1, Ohio
Worthington Corp., Harrison, N. J.

DEIONIZATION APPARATUS

See WATER CONDITIONERS

DE-IONIZERS

See DEMINERALIZERS

DELAY LINES

Aerovox Corp., Pacific Coast Div., 2724 S. Peck Rd., Monrovia, Calif.
Alden Products Co., 147 N. Main St., Brockton 64, Mass.
Amp, Incorporated, Harrisburg, Pa.
Andersen Laboratories, Inc., 39 Talcott Rd., West Hartford 10, Conn.
Arenberg Ultrasonic Lab. Inc., 94 Green St., Jamaica Plain 30, Mass.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
Barker & Williamson, Inc., Canal & Beaver, Bristol, Pa.
Brew & Co., Inc., Richard D., Airport Rd., Box 339, Concord, N. H.
Columbia Technical Corp., 61-02 31st Ave., Woodside 77, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Daltime, Inc., 608 Fayette Ave., Mamaroneck, N. Y.
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
E S C Corp., 534 Bergen Blvd., Palisades Park, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Essex Electronics, Springfield Ave., Berkeley Heights, N. J.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 49, Mass.
Gudeman Co., 340 W. Huron St., Chicago 10, Ill.
Helipot Corp., Newport Beach, Calif.
International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.
Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda, Md.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
PCA Electronics, Inc., 14799 Schoenborn St., Sepulveda, Calif.
Pulse Engineering, 2657 Spring St., Redwood City, Calif.
Raytheon Mfg. Co., Commercial Equipment Div., 100 River St., Waltham, Mass.
Redman Electronics Corp., P. O. Box 72, Thompsonville, Conn.
Sealtron Corp., Reading Rd. at Amity, Cincinnati 15, Ohio
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Technitrol Engineering Corp., Emerald St. & Allegheny Ave., Philadelphia 34, Pa.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Tobe Deutschmann Corp., Providence Highway, Norwood, Mass.
United Transformer Corp., 150 Varick St., New York 13, N. Y.
Waters Manufacturing, Inc., Boston Post Rd., Wayland, Mass.

DEMINERALIZERS

Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.

Barnstead Still & Sterilizer Co., 84 Lanesville Terrace, Boston 31, Mass.
Chem-Pure Service Co., 762 Industrial Rd., San Carlos, Calif.
ELGIN SOFTENER CORP., 179 S. Grove Ave., Elgin, Ill. ADV. PG. 110
Graver Water Conditioner Co., 216 W. 14th St., New York 11, N. Y.
Illinois Water Treatment Co., 858 Cedar St., Rockford, Ill.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Isotope Developments Ltd., Boenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
PENFIELD MFG. CO., INC., 19 High School Ave., Meriden, Conn. ADV. PG. 159
Permutit Co., 50 W. 44th St., New York 36, N. Y.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Rohm & Haas Co., Washington Square, Philadelphia 5, Pa.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

DENSITOMETERS

Alco Scientific Div. of A. S. Alco Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Applied Research Labs., P. O. Box 1710, Glendale 5, Calif.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. Mex.
Epic, 154 Nassau St., New York 38, N. Y.
Farnsworth Electronics Co., Div. of IT&T, Fort Wayne, Ind.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Goertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Macbeth Instrument Corp., Little Britain Rd., Newburgh, N. Y.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Photovolt Corp., 95 Madison Ave., New York 16, N. Y.
Potter Aeronautical Corp., Route 22, Union, N. J.
Spinco Div. of Beckman Instruments, Inc., 1117 California Ave., Palo Alto, Calif.
Thomas Co., Arthur H., Vine St. at Third, Box 779, Philadelphia 5, Pa.
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
Whitehead & Haag Co., The, 272 Sussex Ave., Newark 1, N. J.

DESICCATORS

Barium & Chemicals, Inc., Willoughby, Ohio
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230–11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Kahn & Co., Inc., 541 Windsor St., Hartford 1, Conn.
Labline, Inc., 3070–82 W. Grand Ave., Chicago 22, Ill.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Monsanto Chemical Co., Plastics Div., 600 Monsanto Ave., Springfield 2, Mass.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Robbins Aviation, 1735 W. Florence Ave., Los Angeles 47, Calif.
Townson & Mercer, Ltd., Croydon, Surrey, England
Will Corp., Box 1050, Rochester 3, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

DESIGN, ENGINEERING & CONSTRUCTION

See SERVICES—Engineering & Construction

DETECTORS

See also COUNTERS

DETECTORS—Differential Pressure

Automatic Timing & Controls, Inc., King of Prussia, Pa.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fredericks Co., George E., Bethayres, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hastings-Raydist, Inc., Newcomb Ave., Hampton, Va.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Trans-Sonics, Inc., P. O. Box 328, Lexington 73, Mass.
Ultradyne Engineering Labs., Inc., P. O. Box 3008 Albuquerque, N. M.
U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

DETECTORS—Gas

BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Davis Emergency Equipment Co., Davis Instrument Div., 47 Halleck St., Newark 4, N. J.
Dextron Engineering, 1 Winslow St., Redwood City, Calif.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
General Scientific Equipment Co., 7516 Limekiln Pike, Philadelphia 50, Pa.
Hunter-Bristol Corp., Bristol, Pa.
Johnson-Williams, Inc., 2625 Park Blvd., Palo Alto, Calif.
Kruger Instruments, Harold, P. O. Box 164, San Gabriel, Calif.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
National Instrument Labs., Inc., 6108 Rhode Island Ave., Riverdale, Md.
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Resitron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
Servall, Inc., Ivan, P. O. Box 230, Pearl St., Norwalk, Conn.
Taller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.

DETECTORS—Leak

American Electronics, Inc., 635 W. Washington Blvd., Los Angeles 15, Calif.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Computer-Measurements Corp., 5528 Vineland Ave., North Hollywood, Calif.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Consolidated Electrodynamics Corp., Rochester Div., 1775 Mt. Read Blvd., Rochester, N. Y.
Davis Emergency Equipment Co., Davis Instrument Div., 47 Halleck St., Newark 4, N. J.
Elster Engineering Co., 760 S. 13th St., Newark 3, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Gates & Co., Inc., George W., Hempstead Turnpike & Lucille Ave., Franklin Square, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Goldak Co., Inc., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Highside Chemicals, Inc., 10 Colfax Ave., Clifton, N. J.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
LINDE CO., DIV. OF UNION CARBIDE CO., 30 E. 42nd St., New York 17, N. Y. ADV. PG. 184
MAGNAFLUX CORP., 7346 W. Lawrence Ave., Chicago 31, Ill. ADV. PG. 118
Menlo Research Laboratory, 538 Phelan Ave., San Jose, Calif.
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
NRC EQUIPMENT CORP., A SUB. OF NATIONAL RESEARCH CORP., 87 Cherlemont St., Newton Highlands 61, Mass. ADV. PG. 32
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Potter Aeronautical Corp., Route 22, Union, N. J.
Resitron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
Vacuum Industrial Applications, Ltd., Netherton Rd., Wishaw, Lanarkshire, Scotland
Vacuum Tube Products Co., Inc., 506 S. Cleveland St., Oceanside, Calif.
Varnitron Co., 416 N. Verney St., Burbank, Calif.
Veeco Vacuum Corp., 86 Denton Ave., New Hyde Park, N. Y.

DETECTORS—Liquid Level

Acoustica Associates, Inc., 26 Windsor Rd., Mineola, N. Y.
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Electrical Control Corp., 1573 E. Forest St., Detroit 7, Mich.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fielden Electronics Ltd., Paston Rd., Whytenshawe, Manchester, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Gems Co., P. O. Box 222, Newinton, Conn.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gulton Industries, Durham Ave., Metuchen, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotope Developments Ltd., Boenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JORDAN ELECTRONICS A DIV. OF THE VICTOREEN INSTRUMENT CO., 3025 W. Mission Rd., Alhambra, Calif. ADV. PG. 188, 189
MAGNETROL INC., 2110 S. Marshall St., Chicago 23, Ill. ADV. PG. 191
Marine Electric Corp., 600 Fourth Ave., Brooklyn, N. Y.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Research Corp., Southampton, Pa.
Ohmart Corp., 2236 Bogen St., P. O. Box 47, Station B, Cincinnati 22, Ohio
Patterson Moos Div., University Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
Trans-Sonics, Inc., P. O. Box 328, Lexington 73, Mass.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

DETECTORS—Metal

Barnes Development Co., 213 W. Baltimore Pike, Lansdowne, Pa.
Bermon Laboratories, 112-03 Rockaway Blvd., Ozone Park 20, N. Y.
Cinema-Television, Ltd., Worsley Bridge Rd., London, S. E. 26, England
Computer-Measurements Corp., 5528 Vineland Ave., North Hollywood, Calif.
Dice Co., J. W., Englewood 41, N. J.
Geidak Co., Inc., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
MAGNAFLUX CORP., 7346 W. Lawrence Ave., Chicago 31, Ill. ADV. PG. 118
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Omco, U. S. 93 & Las Palomas St., Kingman, Ariz.
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y.
Precision Radiation Instruments, Inc., 4223 W. Jefferson Blvd., Los Angeles 16, Calif.
Revere Corp. of America, Wallingford, Conn.

DETECTORS—Primary Coolout Pressure

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
MSH Research Corp., Callery, Pa.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Trans-Sonics, Inc., P. O. Box 328, Lexington 73, Mass.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

DETECTORS—Radiation

See CHAMBERS—Ionization
COUNTERS
DOSIMETERS
G-M TUBES
METALS—Foil
SCINTILLATORS—Crystal

DETECTORS—Temperature

Aero Research Instrument Co., 315 N. Aberdeen St., Chicago 7, Ill.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Bristol Co., P. O. Box 1790 NBO, Waterbury 20, Conn.
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
Edison Industries, Thomas A., Instrument Div., West Orange, N. J.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fielden Electronics Ltd., Paston Rd., Whytenshawe, Manchester, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fredericks Co., George E., Bethayres, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Kidde & Co., Inc., Walter, 377 Main St., Belleville 9, N. J.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Ruge Associates, Inc., Arthur C., 733 Concord Ave., Cambridge 38, Mass.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Thermo-Electric Co., Inc., Rochelle Park Post Office, Saddle Brook, N. J.
Trans-Sonics, Inc., P. O. Box 328, Lexington 73, Mass.
Ulanet Co., George, 413 Market St., Newark 5, N. J.
Victory Engineering Corp., 77 Springfield Rd., Union, N. J.
West Instrument Corp., 4363 W. Montrose Ave., Chicago 41, Ill.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

DETECTORS—Vacuum

See CONTROLS—Vacuum

DETECTORS—Velocity, Coolout Flow

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Aero Research Instrument Co., 315 N. Aberdeen St., Chicago 7, Ill.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Gems Co., P. O. Box 222, Newinton, Conn.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
MAGNETROL INC., 2110 S. Marshall St., Chicago 23, Ill. ADV. PG. 191
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

DETERGENTS

See DECONTAMINATES

DIODES—Semiconductor

Amperex Electronic Corp., Duffy Ave., Hicksville, N. Y.
Bomac Laboratories, Inc., Salem Rd., Beverly, Mass.
CBS-Hytron, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass.
Clevite Transistor Products, A Div. of The Clevite Corp., 241-257 Crescent St., Waltham 54, Mass.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
General Electric Co., Semiconductor Products Dept., Electronics Park, Syracuse, N. Y.
Hughes Products, Los Angeles 45, Calif.
International Rectifier Corp., 1521 E. Grand Ave., El Segundo, Calif.
International Telephone & Telegraph Corp., Components Div., Semi-Conductor Div., 100 Kingsland Rd., Clifton, N. J.
Lansdale Tube Co., Div. of Philco Corp., Lansdale, Pa.
Motorola, Inc., Semiconductor Products Div., 5005 E. McDowell Rd., Phoenix, Ariz.
Pacific Semiconductors, Inc., 10451 W. Jefferson Blvd., Culver City, Calif.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Radio Corporation of America Tube Div., 415 S. Fifth St., Harrison, N. J.
Radio Development & Research Corp., 100 Pennsylvania Ave., Paterson 3, N. J.
Raytheon Mfg. Co., Receiving & Cathode Ray Tube Operations, 55 Chapel St., Newton 58, Mass.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Sarkes Tarzian, Inc., 415 N. College Ave., Bloomington, Ind.
Sperry Gyroscope Div. of Sperry-Rand Corp., Great Neck, N. Y.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Texas Instruments Incorporated, 6000 Lemmon Ave., Dallas 9, Texas
Transitron Electronics Corp., 168 Albion St., Wakefield, Mass.
Tung-Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

DISTILLATION EQUIPMENT

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Aetna Scientific Co., Second & Spring Sts., Everett 49, Mass.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Amarell Co., Inc., 683 Ramsey Ave., Hillside, N. J.
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Consolidated Electrodynamics Corp., Rochester Div., 1775 Mt. Read Blvd., Rochester, N. Y.
Continental Copper & Steel Industries, Alley Fabricators Div., 500 Market St., Perth Amboy, N. J.
Custom Lubricant Co., 743 Dwight Way, Berkeley 10, Calif.
Doyle & Roth Mfg. Co., Inc., 136-50 24th St., Brooklyn 32, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Glass Engineering Laboratories, 601 O'Neil Ave., Belmont, Calif.
GRAVER TANK & MFG. CO., INC., 4809 Tod Ave., East Chicago, Ind. ADV. PG. 127
Humboldt Mfg. Co., 2014 N. Whipple St., Chicago 47, Ill.
Koven Fabricators, Inc., 90 E. Dickerson St., Dover, N. J.
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill.
Maxim Silencer Co., The, Homestead Ave., Hartford, Conn.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Packed Column Corp., 30 Church St., New York 7, N. Y.
Pfaudler Co., 1092 West Ave., Rochester, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Sulzer Bros. Ltd., New York, 50 Church St., New York 7, N. Y.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs., England
Townson & Mercer, Ltd., Croydon, Surrey, England
U. S. Hoffman Machinery Corp., 103 Fourth Ave., New York 3, N. Y.

DOORS—Airtight Access

Air & Refrigeration Corp., 439 Madison Ave., New York 17, N. Y.
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230-11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
Standard Railway Equipment Mfg. Co., 310 S. Michigan Ave., Chicago 4, Ill.

DOSIMETER CHARGERS

ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Chatham Electronics Div. of Tung-Sol Electric Inc., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
Isotope Developments Ltd., Boonham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
JORDAN ELECTRONICS, A DIV. OF THE VICTOREEN INSTRUMENT CO., 3025 W. Mission Rd., Alhambra, Calif. ADV. PG. 188, 189
Landswerk Electrometer Co., 550-552 W. Garfield Ave., Glendale 4, Calif.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Radiation Research Corp., 140 E. 59th St., New York, N. Y.
Salus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
Stephen & Co., Ltd., R. A., 120-126 Lavender Ave., Mitcham, Surrey, England
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

DOSIMETERS

See CHAMBERS—Ionization
COUNTERS

DOSIMETERS—Chemical

Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Electronized Chemical Corp., 846 Lafferts Ave., Brooklyn 3, N. Y.

LANDAUER, JR., & CO., R. S., 24 Plaza, Park Forest, Ill. ADV. PG. 168
Nuclear Corp of America, Inc., 400 Park Ave., New York 17, N. Y.
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
Radiation Applications Inc., 342 Madison Ave., New York 17, N. Y.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 195
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trionics Corp., P. O. Box 548, Madison 1, Wis.
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120

DOSIMETERS—Crystal

Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Menlo Research Laboratory, 538 Phelan Ave., San Jose, Calif.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.

DOSIMETERS—Film Badge

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
LANDAUER, JR. & CO., R. S., 24 Plaza, Park Forest, Ill. ADV. PG. 168
Mellon Inc., George T., 132 Nassau St., New York 38, N. Y.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Photovolt Corp., 95 Madison Ave., New York 16, N. Y.
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
SAMPLES MACHINE CO., A. M., 208 Tazewell Place, Knoxville 18, Tenn. ADV. PG. 206
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 195
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

DOSIMETERS—G-M

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Dextron Engineering, 1 Winslow St., Redwood City, Calif.
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Mellon Inc., George T., 132 Nassau St., New York 38, N. Y.
Nuclear Research Applications, Ltd., "Emefco" House, Reigate (Surrey) England
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50

DOSIMETERS—Glass

Bausch & Lomb Optical Co., 630 St. Paul St., Rochester, N. Y.
Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Electromation Co., 1646 18th St., Santa Monica, Calif.
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
PENBERTHY INSTRUMENT CO., HI-D DIV., 4301 6th Ave., South Seattle 8, Wash. ADV. PG. 108
Pittsburgh Plate Glass Co., 632 Fort Duquesne Blvd., Pittsburgh 22, Pa.
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.

DOSIMETERS—Ionization Chamber

ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Cambridge Instrument Co., Inc., 3529 Grand Central Terminal, New York 17, N. Y.
Chatham Electronics Div. of Tung-Sol Electric Inc., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Electromation Co., 1646 18th St., Santa Monica, Calif.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Selus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

DOSIMETERS—Pocket

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa.
Cambridge Instrument Co., Inc., 3529 Grand Central Terminal, New York 17, N. Y.
Chatham Electronics Div. of Tung-Sol Electric Inc., Livingston, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Electromation Co., 1646 18th St., Santa Monica, Calif.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
JORDAN ELECTRONICS A DIV. OF THE VICTOREEN INSTRUMENT CO., 3025 W. Mission Rd., Alhambra, Calif. ADV. PG. 188, 189
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Mellon Inc., George T., 132 Nassau St., New York 38, N. Y.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Selus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
Stephen & Co., Ltd., E. A., 120–126 Lavender Ave., Mitcham, Surrey, England
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

DRYERS—Vacuum

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Alse Scientific Div. of A. S. Alse Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Blickman Co., S., 7900 Gregory Ave., Weehawken, N. J.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
General American Transportation Corp., 135 S. LaSalle, Chicago, Ill.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
Kinetics Corp., 2 Churchill Rd., Hingham, Mass.
Leblino, Inc., 3070–82 W. Grand Ave., Chicago 22, Ill.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
NRC EQUIPMENT CORP., A SUB. OF NATIONAL RESEARCH CORP., 87 Charlemont St., Newton Highlands 61, Mass. ADV. PG. 32
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
STOKES CORP., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 132
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Townson & Mercer, Ltd., Croydon, Surrey, England
Vacuum Industrial Applications, Ltd., Netherton Rd., Wishaw, Lanarkshire, Scotland

ELECTROMETERS

See also AMMETERS—Micro-Micro

Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bristol Co., P. O. Box 1790 NBO, Waterbury 20, Conn.
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Cambridge Instrument Co., Inc., 3529 Grand Central Terminal, New York 17, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12415 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Neutronics Laboratory, Tinley Park, Ill.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167

ELECTROMETERS—Vibrating Reed

AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34–01 30th St., Long Island City 6, N. Y. ADV. PG. 181

Applied Physics Corp., 362 Colorado Blvd., Pasadena 1, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
NUCLEAR-CHICAGO CORP., 229 Erie St., Chicago, Ill. ADV. PG. 59
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50

ENGINEERING & DESIGN SERVICES

See SERVICES—Consulting & Engineering Services

ENTRAINMENT SEPARATORS

Air-Maze Corp., 25000 Miles Rd., Cleveland, Ohio
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y.
Graver Water Conditioner Co., 216 W. 14th St., New York 11, N. Y.
Leavitt Machine Co., The, 10 E. River St., Orange, Mass.
Metal Textile Corp., 647 E. First Ave., Roselle, N. J.
NARDA ULTRASONICS CORP., THE, Sub. of the Narda Microwave Corp., 158 Herricks Rd., Mineola, N. Y. ADV. PG. 121
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
York Co., Otto H., 6 Central Ave., West Orange, N. J.

EVAPORATORS

See POWER PLANT EQUIPMENT

EXPANSION JOINTS

See BELLOWS & EXPANSION JOINTS

EXPONENTIAL PILE

See REACTORS

EXTRACTORS—Fuel Element

Aerojet-General Nucleonics, San Ramon, Calif.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
MARVEL-SCHEBLER PRODUCTS DIV. OF BORG-WARNER CORP., Decatur, Ill. ADV. PG. 60D

FACILITIES—Design

See SERVICES—Consulting & Engineering

FANS

See BLOWERS

FEED WATER HEATERS

See POWER PLANT EQUIPMENT

FILM BADGE SERVICES

See SERVICES

FILM BADGES

See DOSIMETERS—Film Badge

FILTERS—Air

Adams Co., Inc., R. P., E. Park Drive, Buffalo 17, N. Y.
Air-Maze Corp., 25000 Miles Rd., Cleveland, Ohio
Air & Refrigeration Corp., 439 Madison Ave., New York 17, N. Y.
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
American Air Filter Co., 215 Central Ave., Louisville 8, Ky.
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Cambridge Filter Corp., 738 E. Erie Blvd., Syracuse, N. Y.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Continental Air Filters, Inc., 2520 Holm St., Louisville, Ky.
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230-11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Drico Industrial Corp., 100 8th St., Passaic, N. J.
FLANDERS FILTERS, INC., Riverhead, N. Y. ADV. PG. 155
Fluor Products Co., 1200 E. Washington Blvd., Whittier, Calif.
Goodyear Tire & Rubber Co., Akron, Ohio
Hanna Engineering Works, 1767 N. Elston Ave., Chicago 22, Ill.
Kay & MacDonald, Inc., 11-15 Central Ave., West Orange, N. J.
Leavitt Machine Co., The, 10 E. River St., Orange, Mass.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Mason-Neilan, Nahatan St., Norwood, Mass.
Metal Textile Corp., 647 E. First Ave., Roselle, N. J.
METALS DISINTEGRATING CO., INC., P. O. Box 290, Elizabeth, N. J. ADV. PG. 205
Micro Metallic Corp., 30 Sea Cliff Ave., Glen Cove, N. Y.
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
Pall Filtration Co., 30 Sea Cliff Ave., Glen Cove, N. Y.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Pyramid Screen Corp., 181 Harvard St., Brookline 46, Boston, Mass.
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
Research Products Corp., 1015 E. Washington Ave., Madison, Wis.
Robbins Aviation, 1735 W. Florence Ave., Los Angeles 47, Calif.
Schleicher & Schuell Co., Carl, Keene, N. H.
Sethco Mfg. Co., 2284 Babylon Turnpike, Merrick, N. Y.
STAPLEX CO., THE, AIR SAMPLER DIV., 775 Fifth Ave., Brooklyn 32, N. Y. ADV. PG. 184
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Trion, Inc., 1000 Island Ave., McKees Rocks, Pa.
United Aircraft Products, Inc., 1116 Bolander, Dayton, Ohio
Wood & Co., Charles S., 88 Main St., West Orange, N. J.
York Corp., York, Pa.

FILTERS—Asbestos

Croll-Reynolds Engineering Co., 17 John St., New York 38, N. Y.
Ertel Engineering Corp., Kingston 31, N. Y.
FLANDERS FILTERS, INC., Riverhead, N. Y. ADV. PG. 155
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Niagara Filters Div., & Tolhurst Centrifugals Div., American Machine & Metals, Inc., East Moline, Ill.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.

FILTERS—Cotton

Commercial Filters Corp., 2 Main St., Melrose 76, Mass.
Croll-Reynolds Engineering Co., 17 John St., New York 38, N. Y.
Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.
Hoosier Tarpaulin & Canvas Goods Co., 1302 W. Washington Ave., Indianapolis 6, Ind.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Niagara Filters Div., & Tolhurst Centrifugals Div., American Machine & Metals, Inc., East Moline, Ill.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Schleicher & Schuell Co., Carl, Keene, N. H.
Sethco Mfg. Co., 2284 Babylon Turnpike, Merrick, N. Y.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.

FILTERS—Metallic

Adams Co., Inc., R. P., 473 E. Park Drive, Buffalo 17, N. Y.
Air & Refrigeration Corp., 439 Madison Ave., New York 17, N. Y.
Commercial Filters Corp., 2 Main St., Melrose 76, Mass.
Croll-Reynolds Engineering Co., 17 John St., New York 38, N. Y.
Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.
Duriron Co., Inc., 450 N. Findlay St., Dayton, Ohio
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Marvel Engineering Co., 7227 N. Hamlin Ave., Chicago 45, Ill.
Metal Textile Corp., 647 E. First Ave., Roselle, N. J.
Micro Metallic Corp., 30 Sea Cliff Ave., Glen Cove, N. Y.
Newark Wire Cloth Co., 351 Verona Ave., Newark 4, N. J.
Niagara Filters Div., & Tolhurst Centrifugals Div., American Machine & Metals, Inc., East Moline, Ill.
Pall Filtration Co., 30 Sea Cliff Ave., Glen Cove, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Pyramid Screen Corp., 181 Harvard St., Brookline 46, Boston, Mass.
Sol-Rex Corp., 75 River Rd., Nutley 10, N. J.
Sparkler Mfg. Co., Mundelein, Ill.
Sperry & Co., D. R., Batavia, Ill.
York Co., Otto H., 6 Central Ave., West Orange, N. J.

FILTERS—Paper

ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.
Drico Industrial Corp., 100 8th St., Passaic, N. J.
Eaton-Dikeman Co., Mount Holly Springs, Pa.
Ertel Engineering Corp., Kingston 31, N. Y.
FLANDERS FILTERS, INC., Riverhead, N. Y. ADV. PG. 155
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Schleicher & Schuell Co., Carl, Keene, N. H.
Sperry & Co., D. R., Batavia, Ill.
STAPLEX CO., THE, AIR SAMPLER DIV., 775 Fifth Ave., Brooklyn 32, N. Y. ADV. PG. 184
U. S. Hoffman Machinery Corp., 103 Fourth Ave., New York 3, N. Y.
Will Corp., Box 1050, Rochester 3, N. Y.

FILTERS—Plastic

Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
American Agile Corp., P. O. Box 168, Bedford, Ohio
Collier Mfg. Corp., Gainesville, Ga.
Croll-Reynolds Engineering Co., 17 John St., New York 38, N. Y.
Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.
Emerson Plastics Corp., 1383 Seabury Ave., Bronx 61, N. Y.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Micro Metallic Corp., 30 Sea Cliff Ave., Glen Cove, N. Y.
Pall Filtration Co., 30 Sea Cliff Ave., Glen Cove, N. Y.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Sperry & Co., D. R., Batavia, Ill.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Westlake Plastics Co., West Lenni Rd., Lenni Mills, Pa.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

FILTERS—Radiation

See ABSORBERS—Radiation

FILTERS—Rubber

Croll-Reynolds Engineering Co., 17 John St., New York 38, N. Y.
Ertel Engineering Corp., Kingston 31, N. Y.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Sperry & Co., D. R., Batavia, Ill.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.

FILTERS—Synthetic Fibre

Air & Refrigeration Corp., 439 Madison Ave., New York 17, N. Y.
Carborundum Co., Refractories Div., Keasbey, N. J.
Commercial Filters Corp., 2 Main St., Melrose 76, Mass.

Crail-Reynolds Engineering Co., 17 John St., New York 38, N. Y.
Drico Industrial Corp., 100 8th St., Passaic, N. J.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Metal Textile Corp., 647 E. First Ave., Roselle, N. J.
Niagara Filters Div. & Telhurst Centrifugals Div., American Machine & Metals, Inc., East Moline, Ill.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Schleicher & Schuell Co., Carl, Keene, N. H.
Sethco Mfg. Co., 2284 Babylon Turnpike, Merrick, N. Y.
U. S. Hoffman Machinery Corp., 103 Fourth Ave., New York 3, N. Y.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Varniton Co., 416 N. Varney St., Burbank, Calif.

FITTINGS—Flared Tube

See PIPE FITTINGS

FLANGES—Pipe

ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
Camco Products, Inc., 445 State St., North Haven, Conn.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Cooper Alloy Corp., Hoy St. & Ramsay Ave., Hillside 5, N. J.
CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. ADV. PG. 58
GRAVER TANK & MFG. CO., 4809 Tod Ave., E. Chicago, Ind. ADV. PG. 127
Grinnell Co., Inc., 260 W. Exchange St., Providence 1, R. I.
LADISH CO., 5458 S. Packard Ave., Cudahy, Wis. ADV. PG. 8A–8E
Taylor Forge & Pipe Works, 4735 W. 14th St., Chicago 90, Ill.
TUBE TURNS, DIV. OF NATIONAL CYLINDER GAS CO., 224 E. Broadway, Louisville, Ky. ADV. PG. 39
Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.
Walworth Co., 60 E. 42nd St., New York 17, N. Y.
Welding Fittings Corp., New Castle, Pa.
York Corp., York, Pa.

FLUORIMETERS

Aloe Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Coleman Instruments, Inc., 318 Madison St., Maywood, Ill.
Epic, 154 Nassau St., New York 38, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Photovolt Corp., 95 Madison Ave., New York 16, N. Y.

FLUORINE

Baker & Adamson Products, General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.

FLUXMETERS—Magnetic

See METERS—GAUSS

FOILS—Radiation Measuring

See METALS—Foil

FOUNTAINS—Eye

Bullard Co., E. D., 2680 Bridgeway, Sausalito, Calif.
General Scientific Equipment Co., 7316 Limekiln Pike, Philadelphia 50, Pa.
HAWS DRINKING FAUCET CO., 1439 Fourth St., Berkeley 10, Calif. ADV. PG. 197
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England

FUEL ELEMENTS—NUCLEAR

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
AMERICAN LAVA CORP., STEATITE DIV., Manufacturers Rd., Chattanooga 5, Tenn. ADV. PG. 52
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Combustion Engineering, Inc., 200 Madison Ave., New York 16, N. Y.
GENERAL ATOMIC DIV. OF GENERAL DYNAMICS CORP., P. O. Box 608, San Diego 12, Calif. ADV. PG. 111
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gulton Industries, Durham Ave., Metuchen, N. J.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Makepeace Co., D. E., Attleboro, Mass.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
Modine Mfg. Co., Industrial Div., Racine, Wis.
National Lead Co., 111 Broadway, New York 6, N. Y.
NORTON CO., 1 New Bond St., Worcester 6, Mass. ADV. PG. 37
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
NUCLEAR METALS, INC., 224 Albany St., Cambridge 39, Mass. ADV. PG. 154
Olin Mathieson Chemical Corp., Nuclear Exel Div., 275 Winchester Ave., New Haven, Conn.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

FUEL ELEMENTS, NUCLEAR—Fabricating & Refabricating Equipment

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
HARPER ELECTRIC FURNACE CORP., 57 River St., Buffalo 2, N. Y. ADV. PG. 156
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
L&B Welding Equipment, Inc., 2424 6th St., Berkeley, Calif.
L & S MACHINE CO., INC., P. O. Box 317, R. D. #2, Latrobe, Pa. ADV. PG. 57
Modine Mfg. Co., Industrial Div., Racine, Wis.
NBC EQUIPMENT CORP., A SUB. OF NATIONAL RESEARCH CORP., 87 Charlemont St., Newton Highlands 61, Mass. ADV. PG. 32
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
NORTON CO., 1 New Bond St., Worcester 6, Mass. ADV. PG. 37
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
STOKES CORP., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 132
Vacuum Specialties Co., Inc., 34 Linden St., Somerville, Mass.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

FUEL ELEMENTS NUCLEAR—Handling & Storage Equipment

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Allied Engineering & Production Corp., 242 Standing Ave., Alameda, Calif.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
FORD INSTRUMENT CO., DIV. OF SPERRY-RAND CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 125
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Knapp Mills, Inc., 33–15 Borden Ave., Long Island City 1, N. Y.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
Penn-Texas Corp., Nuclear Engineering Div., 730 Fifth Ave., New York 19, N. Y.
UNITED SHOE MACHINERY CORP., ATOMIC POWER DEPT., RESEARCH DIV., Balch St., Beverly, Mass. ADV. PG. 107
Warren Corp., The, 2901 Brighton Rd., Pittsburgh 12, Pa.
Western Gear Corp., General Offices, P. O. Box 182, Lynwood, Calif.

FUME HOODS

Adlar's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Air & Refrigeration Corp., 439 Madison Ave., New York 17, N. Y.
Allied Engineering & Production Corp., 242 Standing Ave., Alameda, Calif.
Allied Resinous Products, Inc., Box 620, Concoast, Ohio
Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
American Agile Corp., P. O. Box 168, Bedford, Ohio
American Air Filter Co., 215 Central Ave., Louisville 8, Ky.
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Blickman, Inc., S., 7900 Gregory Ave., Weehawken, N. J.
Brown Morse Co., Muskegon, Mich.
Bullard Co., E. D., 2680 Bridgeway, Sausalito, Calif.
Chicago Apparatus Co., 1735 N. Ashland Ave., Chicago 22, Ill.
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230–11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Duralab Equipment Corp., 980 Linwood St., Brooklyn 8, N. Y.
Electro Chemical Engineering & Mfg. Co., 750 N. Broad St., Emmaus, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
General Metals, Inc., 358 Goldboro St., P. O. Box 448, Greensboro, N. C.
Hamilton Mfg. Co., Two Rivers, Wis.
Haveg Industries, Inc., Halocarbon Div., 950 Greenbank Rd., Wilmington 8, Del.
Hunt, Rodney Machine Co., 46 Mill St., Orange, Mass.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
KEWAUNEE MFG. CO., 5083 Center St., Adrian, Mich. ADV. PG. 174
Labline, Inc., 3070–82 W. Grand Ave., Chicago 22, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Metalab Equipment Co., Div. of Norbute Corp., 282 Duffy Ave., Hicksville, N. Y.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Nukem Products Corp., 111 College Ave., Buffalo 20, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
Standard Railway Equipment Mfg. Co., 310 S. Michigan Ave., Chicago 4, Ill.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Townson & Mercer, Ltd., Croydon, Surrey, England
Universal Industrial Equipment Co., 1625 Paterson Plank Rd., Secaucus, N. J.
Warner Ventilator Co., LaGrange, Ind.
Warren Corp., The, 2901 Brighton Rd., Pittsburgh 12, Pa.
Yarsley & Co., 744 Broad St., Newark 2, N. J.

FURNACES—Combustion, High Temperature

Aloe Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Associated Engineering & Mfg. Corp., Glen Ridge, N. J.

BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Bettinger Corp., Waltham, Mass.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Grieve-Hendry Co., Inc., 1401–17 W. Carroll Ave., Chicago 7, Ill.
Hevi-Duty Electric Co., 2040 W. Wisconsin Ave., Milwaukee 1, Wis.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
Laboratory Equipment Corp., St. Joseph, Mich.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
Research Vacuum Supply Co., 6712 N. Clark St., Chicago, Ill.
Thermal Refractories Corp., 4501 Dell Ave., North Bergen, N. J.
Thermo Electric Mfg. Co., 465 Huff, Dubuque, Iowa

FURNACES—Constant Temperature

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Alco Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Falk & Co., Ltd., M., Emelco House, Bell St., Reigate (Surrey), England
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Grieve-Hendry Co., Inc., 1401–17 W. Carroll Ave., Chicago 7, Ill.
HARPER ELECTRIC FURNACE CORP., 57 River St., Buffalo 2, N. Y. ADV. PG. 156
Hevi-Duty Electric Co., 2040 W. Wisconsin Ave., Milwaukee 1, Wis.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Labline, Inc., 3070–82 W. Grand Ave., Chicago 22, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Lyndon Brothers, Inc., 85 Zabriskie St., Hackensack, N. J.
Metalab Equipment Co., Div. of Norbute Corp., 282 Duffy Ave., Hicksville, N. Y.
Modern Laboratory Equipment Co., 1809–11 First Ave., New York 28, N. Y.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
Research Vacuum Supply Co., 6712 N. Clark St., Chicago, Ill.
Steiner-Ives Co., Springfield Rd., Union, N. J.
Stewart Engineering Co., P. O. Box 277, Soquel, Calif.
Thermal Refractories Corp., 4501 Dell Ave., North Bergen, N. J.
Townson & Mercer, Ltd., Croydon, Surrey, England

FURNACES—Laboratory

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Alco Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Berkeley Crystal Co., 1740 University Ave., Berkeley 3, Calif.
Burrell Corp., 2233 Fifth Ave., Pittsburgh 19, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Electrodynamics Corp., Rochester Div., 1775 Mt. Read Blvd., Rochester, N. Y.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Gordon Co., Cloud S., 3000 S. Wallace St., Chicago 16, Ill.
Grieve-Hendry Co., Inc., 1401–17 W. Carroll Ave., Chicago 7, Ill.
Harlos, Granta Terrace, Stapleford, Cambridge, England
HARPER ELECTRIC FURNACE CORP., 57 River St., Buffalo 2, N. Y. ADV. PG. 156
Hevi-Duty Electric Co., 2040 W. Wisconsin Ave., Milwaukee 1, Wis.
Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Labline, Inc., 3070–82 W. Grand Ave., Chicago 22, Ill.
Laboratory Equipment Corp., St. Joseph, Mich.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Lepel High Frequency Lab., Inc., 55th St. & 37th Ave., Woodside 77, N. Y.
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Metalab Equipment Co., Div. of Norbute Corp., 282 Duffy Ave., Hicksville, N. Y.
Modern Laboratory Equipment Co., 1809–11 First Ave., New York 28, N. Y.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
NRC EQUIPMENT CORP., A SUB. OF NATIONAL RESEARCH CORP., 87 Charlemont St., Newton Highlands 61, Mass. ADV. PG. 32
Pacific Transducer Corp., 11836 S. W. Pico Blvd., Los Angeles 64, Calif.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Research Vacuum Supply Co., 6712 N. Clark St., Chicago, Ill.
SINGLE CRYSTAL CORP. OF AMERICA, RD1, Saxonburg Blvd., Saxonburg, Pa. ADV. PG. 175
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.
Steiner-Ives Co., Springfield Rd., Union, N. J.
Stewart Engineering Co., P. O. Box 277, Soquel, Calif.
Thermal Refractories Corp., 4501 Dell Ave., North Bergen, N. J.
Thermo Electric Mfg. Co., 465 Huff, Dubuque, Iowa
Thomas Co., Arthur A., Vine St. at Third, Box 779, Philadelphia 5, Pa.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lanese, England
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

FURNACES—Microcombustion

See MICROCHEMICAL EQUIPMENT

FURNACES—Sintering

General Electric Co., Furnace Div., Shelbyville, Ind.
HARPER ELECTRIC FURNACE CORP., 57 River St., Buffalo 2, N. Y. ADV. PG. 156

FURNACES—Vacuum

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
Alco Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Associated Engineering & Mfg. Co., Glen Ridge, N. J.
Consolidated Electrodynamics Corp., Rochester Div., 1775 Mt. Read Blvd., Rochester, N. Y.
Fredericks Co., George E., Bethayres, Pa.
Grieve-Hendry Co., Inc., 1401–17 W. Carroll Ave., Chicago 7, Ill.
Hevi-Duty Electric Co., 2040 W. Wisconsin Ave., Milwaukee 1, Wis.
High Vacuum Equipment Corp., 2 Churchill Rd., Hingham, Mass.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.
International Pump & Machine Works, 81 Dorsa Ave., Livingston, N. J.
JOHNSON & ASSOCIATES, INC., WILLIAM S., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
KINNEY MFG. DIV. THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
Kinetics Corp., 2 Churchill Rd., Hingham, Mass.
Kevan Fabricators, Inc., 90 E. Dickerson St., Dover, N. J.
L&B Welding Equipment, Inc., 2424 6th St., Berkeley, Calif.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Lepel High Frequency Lab., Inc., 55th St. & 37th Ave., Woodside 77, N. Y.
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Mallory-Schwarzkopf Metals Inc., 320 Yonkers Ave., Yonkers, N. Y.
Modern Laboratory Equipment Co., 1809–11 First Ave., New York 28, N. Y.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
NRC EQUIPMENT CORP., A SUB. OF NATIONAL RESEARCH CORP., 87 Charlemont St., Newton Highlands 61, Mass. ADV. PG. 32
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
SCIENTIFIC ENGINEERING LABORATORY, 2229 McGee Ave., Berkeley, Calif. ADV. PG. 198
Steiner-Ives Co., Springfield Rd., Union, N. J.
Stewart Engineering Co., P. O. Box 277, Soquel, Calif.
STOKES CORP., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 132
Vacuum Equipment Div. of The New York Air Brake Co., Admiral Wilson Blvd., Camden, N. J.
Vacuum Industrial Applications, Ltd., Netherton Rd., Wishaw, Lanarkshire, Scotland
Vacuum Specialties Co., Inc., 34 Linden St., Somerville, Mass.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y

FURNITURE—Laboratory

See Also CABINETS; HOODS; TABLE TOPS, etc

Alden Systems Co., Alden Research Center, Westboro, Mass.
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
Alco Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Bernard-Franklin Co., Inc., 4155 E. Hedley St., Philadelphia 37, Pa.
Blickman Co., S., 7900 Gregory Ave., Weehawken, N. J.
Brown Morse Co., Muskegon, Mich.
Chicago Apparatus Co., 1735 N. Ashland Ave., Chicago 22, Ill.
Duralab Equipment Corp., 980 Linwood St., Brooklyn 8, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburg 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Hamilton Mfg. Co., Two Rivers, Wis.
Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
KEWAUNEE MFG. CO., 5083 S. Center St., Adrian, Mich. ADV. PG. 174
Labline, Inc., 3070–82 W. Grand Ave., Chicago 22, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Lyon Metal Products, Inc., 10 Montgomery St., Aurora, Ill.
Metalab Equipment Co., Div. of Norbute Corp., 282 Duffy Ave., Hicksville, N. Y.
Standard Pressed Steel Co., Box 1033, Jenkintown, Pa.
Technical Service Corp., 1404 W. Market St., Louisville 3, Ky.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lanese, England
Townson & Mercer, Ltd., Croydon, Surrey, England
Universal Industrial Equipment Co., 1625 Paterson Plank Rd., Secaucus, N. J.
Warren Corp., The, 2901 Brighton Rd., Pittsburgh 12, Pa.
Watson Mfg. Co., Inc., Jamestown, N. Y.

GAGES

See also CONTROLS
INDICATORS
METERS

GAGES—Flow

See METERS—Flow

GAGES—Humidity

Abbeon Supply Co., 179–15 Jamaica Ave., Jamaica 32, N. Y.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Isotope Products (Instrument Div.) Inc., Buffalo, N. Y.
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208

Measurement Engineering, Ltd., Arnprior, Ontario, Canada
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Weksler Thermometer Corp., 195 E. Merrick Rd., Freeport, N. Y.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.

GAGES—Ionization

See CHAMBERS—Ionization

GAGES—Liquid Level

Acoustica Associates, Inc., 26 Windsor Rd., Mineola, N. Y.
Alloy Steel Products Co., 1329 W. Elizabeth Ave., Linden, N. J.
All Stainless Inc., 36 Rugg Road, Allston 34, Mass.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
B-I-F Industries, Inc., 530-D Harris Ave., Providence 1, R. I.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brooks Rotameter Co., Box 432, Lansdale, Pa.
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Cooper Alloy Corp., Bloy St. & Romsey Ave., Hillside 5, N. J.
CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. ADV. PG. 58
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Diamond Power Specialty Corp., Lancaster, Ohio
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fielden Electronics Ltd., Poston Rd., Whytenshawe, Manchester, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Iowa
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Gems Co., P. O. Box 222, Newington, Conn.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
HAYS CORP., Michigan City 39, Ind. ADV. PG. 183
Instruments, Inc., 122 N. Madison P. O. Box 556, Tulsa, Okla.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Jorgusen Gage & Valve Co., Adams St., Burlington, Mass.
Keckley Co., O. C., 3400 Cleveland St., Skokie, Ill.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Lunkenheimer Co., The, Beckman St., & Waverly Ave., Cincinnati 14, Ohio
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Nahatan St., Norwood, Mass.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Milwaukee Glass Works, Inc., 2338 N. 30th St., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
NARDA ULTRASONICS CORP., THE, Sub. of the Narda Microwave Corp., 158 Harricks Rd., Mineola, N. Y. ADV. PG. 121
Nuclear Aids Corp., 612 N. Michigan Ave., Chicago, Ill.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Research Corp., Southampton, Pa.
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Nucor Research, Inc., 2421 Walcott, Ferndale, Mich.
Ohmart Corp., 2236 Beech St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y.
Powell Co., Wm., Cincinnati 22, Ohio
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Revere Corp. of America, Wallingford, Conn.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Scully Signal Co., Melrose, Mass.
Simmonds Aerocessories, Inc., 105 White Plains Rd., Tarrytown, N. Y.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Suavic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trimount Instrument Co., 3119 W. Lake St., Chicago 12, Ill.
Victory Engineering Corp., 77 Springfield Rd., Union, N. J.
Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

GAGES—McLeod
GAGES—Pirani

See GAGES—Pressure

GAGES—Pressure

Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y.
Allegany Instrument Co., Inc., Cumberland, Md.
Atlantic Research Corp., Electromechanical Div., Alexandria, Va.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
B-I-F Industries, Inc., 530-D Harris Ave., Providence 1, R. I.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Burton Mfg. Co., 2520 Colorado Ave., Santa Monica, Calif.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Edison Industries, Thomas A., Instrument Div., West Orange, N. J.
Elliott Brothers (London) Century Works, Lewisham, London, S. E. 13, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fredericks Co., George E., Bethayres, Pa.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hastings-Raydist, Inc., Newcomb Ave., Hampton, Va.
HAYS CORP., Michigan City 39, Ind. ADV. PG. 183
Haise Bourdon Tube Co., Inc., 1 Brook Rd., Newton, Conn.
Helicoid Gage Div., American Chain & Cable Corp., 929 Connecticut Ave., Bridgeport 2, Conn.
Hett Associates, Inc., 603 Grand Ave., Englewood, N. J.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Librascope, Inc., 808 Western Ave., Glendale, Calif.
MSH Research Corp., Callery, Pa.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Nahatan St., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
National Instrument Labs., Inc., 8108 Rhode Island Ave., Riverdale, Md.
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
Numberg Thermometer Co., Inc., 124 Livingston St., Brooklyn, N. Y.
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photocon Research Products, 421 N. Foothill Blvd., Pasadena 7, Calif.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Statham Laboratories, Inc., 12401 W. Olympic Blvd., Los Angeles 64, Calif.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Trimount Instrument Co., 3119 W. Lake St., Chicago 12, Ill.
Ultrodyne Engineering Labs., Inc., P. O. Box 3308, Albuquerque, N. M.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Vickers Inc., Div. of Sperry-Rand Corp., Marine & Ordnance Dept., Waterbury 20, Conn.
Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.
Weksler Thermometer Corp., 195 E. Merrick Rd., Freeport, N. Y.
Will Corp., Box 1050, Rochester 3, N. Y.

GAGES—Temperature

Assembly Products, Inc., Chesterland 6, Ohio
B-I-F Industries, Inc., 530-D Harris Ave., Providence 1, R. I.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
DeJur-Amsco Corp., 45-01 Northern Blvd., Long Island City 1, N. Y.
Detroit Controls Corp., Control Engineering Unit, 560 Providence Highway, Norwood, Mass.
Edison Industries, Thomas A., Instrument Div., West Orange, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
HAYS CORP., Michigan City 39, Ind. ADV. PG. 183
Hett Associates, Inc., 603 Grand Ave., Englewood, N. J.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Illinois Testing Labs., 420 N. LaSalle St., Chicago, Ill.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Nahatan St., Norwood, Mass.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Back Cover
Numberg Thermometer Co., Inc., 124 Livingston St., Brooklyn, N. Y.
Pacific Transducer Corp., 11836 S. W. Pico Blvd., Los Angeles 64, Calif.
Partlow Corp., The, Dept. NBG-58, New Hartford, N. Y.
Powers Regulator Co., 3400 Oakton, Skokie, Ill.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Ruge Associates, Inc., Arthur C., 733 Concord Ave., Cambridge 38, Mass.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Technique Associates, Inc., 211 E. South St., Indianapolis, Ind.
Thermo-Electric Co., Inc., Rochelle Park Post Office, Saddle Brook, N. J.
U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
Victory Engineering Corp., 77 Springfield Rd., Union, N. J.
Weksler Thermometer Corp., 195 E. Merrick Rd., Freeport, N. Y.
West Instrument Corp., 4343 W. Montrose Ave., Chicago 41, Ill.

Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Westronics, Inc., 3605 McCart, Fort Worth, Texas
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

GAGES—Thickness or Density, Radioactivity

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34-01 30th St., Long Island City 6, N. Y. ADV. PG. 181
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotope Developments Ltd., Beoham Grange Aldermaston Wharf, nr. Reading, Berks, England
Isotope Products (Instrument Div.) Inc., Buffalo, N. Y.
Isotope Products Ltd., Davis Rd., Oakville, Ontario, Canada
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 50
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Research Corp., Southampton, Pa.
Nucar Research, Inc., 3421 Walcott, Ferndale, Mich.
Ohmart Corp., 2236 Begen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y.
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

GAGES—Thickness, Nonradioactivity

Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Branson Instruments, Inc., 37 Brown House Rd., Stamford, Conn.
Custom Scientific Instruments,, Inc., P. O. Box 170, Kearny, N. J.
Dawe Instruments Ltd., 99 Oxbridge Road, Ealing, London W5, England
Dice Co., J. W., Englewood 41, N. J.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gulton Industries, Durham Ave., Metuchen, N. J.
Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Link Aviation, Inc., Binghamton, N. Y.
Nash & Thompson Ltd., Oakcroft Rd., Chessington, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

GAGES—Vacuum

See CONTROLS—Vacuum

GALVANOMETERS

Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Berndt-Bach, Inc., 6900 Romaine St., Los Angeles 38, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Cambridge Instrument Co., Inc., 3529 Grand Central Terminal, New York 17, N. Y.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Coleman Instruments, Inc., 318 Madison St., Maywood, Ill.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Edin Co., Inc., 207 Main St., Worcester, Mass.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Epic, 154 Nassau St., New York 38, N. Y.
Ercona Corp., 551 Fifth Ave., New York, N. Y.
G-M Laboratories, Inc., 4336 N. Knox St., Chicago 41, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gulton Industries, Durham Ave., Metuchen, N. J.
Hathaway Instrument Div., Hamilton Watch Co., 5800 E. Jewell, Denver, Colo.
Holland Div. of Minneapolis-Honeywell Regulator Co., 5200 E. Evans Ave., Denver 22, Colo.
Industrial Instrument Div., Mandrel Industries, Inc., 5134 Glenmont, Houston, Texas
International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
J-B-T Instruments Inc., 441 Chapel St., New Haven 8, Conn.
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Kin Tel (Kay Lab), 5725 Kearny Villa Rd., San Diego 11, Calif.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Marion Electrical Instrument Co., Greiner Field, Manchester, N. H.
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Minneapolis-Honeywell Regulator Co., Boston Div., 1400 Soldiers Field Rd., Boston 35, Mass.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Minneapolis-Honeywell Regulator Co., Rubicon Instruments, Ridge Ave. at 35th St., Philadelphia 32, Pa.
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
Offner Electronics Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Q. V. S., Inc., 20 N. 15th St., East Orange, N. J.
Sanborn Co., Industrial Div., 175 Wyman St., Waltham 54, Mass.
Shalcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Winslow Co., Inc., 9 Liberty St., Newark 2, N. J.

GAMMA-RAY SOURCES

See ISOTOPES—Radioactive

GASES

Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
LINDE CO., DIV. OF UNION CARBIDE CO., 30 E. 42nd St., New York 17, N. Y. ADV. PG. 184
Liquid Carbonic Corp., 3100 S. Kedzie Ave., Chicago 23, Ill.
MacKay Inc., A. D., 198 Broadway, New York 38, N. Y.
Matheson Co., 932 Paterson Plank Rd., East Rutherford, N. J.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120

GASES—Inert

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y.
LINDE CO., DIV. OF UNION CARBIDE CO., 30 E. 42nd St., New York 17, N. Y. ADV. PG. 184
Liquid Carbonic Corp., 3100 S. Kedzie Ave., Chicago 23, Ill.
MacKay Inc., A. D., 198 Broadway, New York 38, N. Y.
Matheson Co., 932 Paterson Plank Rd., East Rutherford, N. J.
Surface Combustion Corp., Air Conditioning Div., 23 Dorr, Toledo 1, Ohio

GASES—Liquefied

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y.
LINDE CO., DIV. OF UNION CARBIDE CO., 30 E. 42nd St., New York 17, N. Y. ADV. PG. 184
Matheson Co., 932 Paterson Plank Rd., East Rutherford, N. J.

GASES—Nuclear Flow Counter

Aerojet-General Nucleonics, San Ramon, Calif.
Matheson Co., 932 Paterson Plank Rd., East Rutherford, N. J.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 50
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50

GASES—Rare

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y.
Associated Engineering & Mfg. Co., Glen Ridge, N. J.
LINDE CO., DIV. OF UNION CARBIDE CO., 30 E. 42nd St., New York 17, N. Y. ADV. PG. 184
MacKay Inc., A. D., 198 Broadway, New York 38, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29

GASKETS

Advanced Products Co., 59 Broadway, North Haven, Conn.
Akron Metallic Gasket Co., The, 150 N. Union St., Akron, Ohio
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Armstrong Cork Co., Lancaster, Pa.
Auburn Mfg. Co., The, 500 Stack St., Middletown, Conn.
Automatic & Precision Mfg. Co., 252 Hawthorne Ave., Yonkers 5, N. Y.
Bacon Industries, Inc., 192 Pleasant St., Watertown, Mass.
Brady Co., W. H., 727 W. Glendale Ave., Milwaukee 12, Wis.
Chicago Gasket Co., 1271 W. North Ave., Chicago 22, Ill.
Collier Mfg. Co., Gainesville, Ga.
Connecticut Hard Rubber Co., New Haven 9, Conn.
Continental-Diamond Fibre Corp., Newark, Delaware
CRANE PACKING CO., 6400 Oakton St., Morton Grove, Ill. ADV. PG. 117
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Dore, Inc., John L., 5408 Schuler St., Houston, Texas
Emerson Plastics Corp., 1383 Seabury Ave., Bronx 61, N. Y.
Felt Products Mfg. Co., 7450 N. McCormick Blvd., P. O. Box 8609, Chicago 80, Ill.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
Garlock Packing Co., The, Palmyra, N. Y.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Metallic Gasket Co., 13 Bethany St., New Brunswick, N. J.
Micromold Corp., 1 School St., Yonkers, N. Y.
Otis Gasket & Rubber Co., Andrew, 231-33 W. Court St., Cincinnati 2, Ohio
Penn Fibre & Specialty Co., 2020 E. Westmoreland St., Philadelphia 34, Pa.
Polymer Corp., The, Reading, Pa.
Resistoflex Corp., Roseland, N. J.
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
Stillman Rubber Co., 5811 Marilyn Ave., Culver City, Calif.
United Aircraft Products, Inc., 1116 Bolander, Dayton, Ohio
U. S. Gasket Co., 600 N. 10th St., Camden 1, N. J.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio.
Veeco Vacuum Corp., 86 Denton Ave., New Hyde Park, N. Y.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

G-M APPARATUS

See also COUNTERS—G-M; DOSIMETERS—G-M

Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
Alden Electronic & Impulse Recording Equipment Co., Westboro, Mass.

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34-01 30th St., Long Island City 6, N. Y. ADV. PG. 181
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Daytron Engineering, 1 Winslow St., Redwood City, Calif.
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
Isotope Developments Ltd., Boonham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Tele-Dynamics, Inc., 5000 Palisade Ave., Philadelphia 3, Pa.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Western Radiation Lab., 1107 W. 24th, Los Angeles 7, Calif.

G-M TUBES—Self-Quenching

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
Glass Engineering Laboratories, 601 O'Neil Ave., Belmont, Calif.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Landsverk Electrometer Co., 550-552 W. Garfield Ave., Glendale 4, Calif.
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Raytheon Mfg. Co., Receiving & Cathode Ray Tube Operations, 55 Chapel St., Newton 58, Mass.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Welch Allyn, Inc., Skaneateles Falls, N. Y.
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

G-M TUBES—Thick Wall, Glass

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
Glass Engineering Laboratories, 601 O'Neil Ave., Belmont, Calif.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Raytheon Mfg. Co., Receiving & Cathode Ray Tube Operations, 55 Chapel St., Newton 58, Mass.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145

G-M TUBES—Thick Wall, Metal

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34-01 30th St., Long Island City 6, N. Y. ADV. PG. 181
Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Landsverk Electrometer Co., 550-552 W. Garfield Ave., Glendale 4, Calif.
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Raytheon Mfg. Co., Receiving & Cathode Tube Operations, 55 Chapel St., Newton 58, Mass.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145

G-M TUBES—Thin Wall

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34-01 30th St., Long Island City 6, N. Y. ADV. PG. 181
Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
Glass Engineering Laboratories, 601 O'Neil Ave., Belmont, Calif.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Landsverk Electrometer Co., 550-552 W. Garfield Ave., Glendale 4, Calif.
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Raytheon Mfg. Co., Receiving & Cathode Ray Tube Operations, 55 Chapel St., Newton 58, Mass.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Centronics Work, King Henry's Drive, New Addington, Surrey, England
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145

G-M TUBES—Thin Window

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
Nuclear Aids Corp., 612 N. Michigan Ave., Chicago, Ill.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 3, N. Y. ADV. PG. 177, 203, 207
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Raytheon Mfg. Co., Receiving & Cathode Tube Operations, 55 Chapel St., Newton 58, Mass.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
WOOD COUNTER LABORATORY, N., 1525 E. 53rd St., Chicago 15, Ill. ADV. PG. 145
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

GENERATORS—Pulse, Square Wave

Acoustica Associates, Inc., 26 Windsor Rd., Mineola, N. Y.
Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Alden Electronic & Impulse Recording Equipment Co., Westboro, Mass.
American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa.
Arnold Magnetics Corp., 5962 Smiley Drive, Culver City, Calif.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Berkshire Laboratories, 588 Bank Village, Greenville, N. H.
Canoga Corp., 8955 Sepulveda Blvd., Van Nuys, Calif.
Cascade Research Corp., 83 Victory Lane, Los Gatos, Calif.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Clegg Laboratories Div. of Clegg, Inc., Ridgedale & Hanover Aves., Morristown, N. J.
Cosmic Radiation Labs., Inc., 247 Blue Point Ave., Blue Point, N. Y.
Cubic Corp., 5575 Kearny Villa Rd., San Diego 11, Calif.
Daven Co., The, Route 10, Livingston, N. J.
Donner Scientific Co., 888 Galindo St., Concord, Calif.
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
Dynatron Radio Ltd., Castle Hill, Maidenhead, Berks, England
Electrical & Physical Instrument Corp., 42-19 27th St., Long Island City 1, N. Y.
Electro-Pulse, Inc., 11861 Teale St., Culver City, Calif.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.

El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Empire Devices Products Corp., Amsterdam, N. Y.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Federal Mfg. & Engineering Corp., 1055 Stewart St., Garden City, N. Y.
Furzehill Laboratories Ltd., 57, Clarendon Rd., Watford, Herts., England
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
HAMNER ELECTRONICS CO., Box 831, Princeton, N. J. ADV. PG. Second Cover
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 18, Ohio
Instrument Development Lab., Inc., 67 Mechanic St., Attleboro, Mass.
Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio
Kay Electric Co., 14 Maple Ave., Pine Brook, N. J.
LaRoe Instruments, Inc., Box 5906, Bethesda, Md.
Lavoie Laboratories, Inc., Matawan-Freehold Rd., Morganville, N. J.
Monson Laboratories, Inc., 207 Greenwich Ave., Stamford, Conn.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Measurements Corp., Boonton, N. J.
New London Instrument Co., P. O. Box 189, New London, Conn.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Nuclear Research Applications, Ltd., "Emafco" House, Bell St., Reigate (Surrey) England
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PARSONS CO., RALPH M., ELECTRONICS DIV., 151 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
Peerless Instrument Co., Inc., 90-15 Corona Ave., Elmhurst 73, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Polarad Electronics Corp., 43-20 34th St., Long Island City 1, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Radiation, Inc., P. O. Box 37, Melbourne, Fla.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Ray Co., Milton, 1300 E. Mermaid Lane, Philadelphia 18, Pa.
Rutherford Electronics Corp., 3707 S. Robertson Blvd., Culver City, Calif.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Spencer-Kennedy Labs., Inc., 1320 Soldiers Field Rd., Boston 35, Mass.
Sperry Gyroscope Div. of Sperry-Rand Corp., Great Neck, N. Y.
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Technitrol Engineering Corp., Emerald St. & Allegheny Ave., Philadelphia 34, Pa.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telotronics Laboratory, Inc., 84 Kinkel St., Westbury, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Walkirt Co., The, 141 W. Hazel St., Inglewood 3, Calif.
Waltham Electronics Corp., 751 Main St., Waltham, Mass.
Wang Laboratories, Inc., 37 Hurley St., Cambridge 41, Mass.

GENERATORS—Signal

Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Airmec Ltd., High Wycombe, Buckinghamshire, England
Alden Electronics & Impulse Recording Equipment Co., Westboro, Mass.
Anatran Div., Endevco Corp. 161 E. California, Pasadena, Calif.
Babcock Relays, Inc., 1640 Monrovia Ave., Costa Mesa, Calif.
Boonton Radio Corp., Boonton, N. J.
Brüel & Kjaer, Naerum, Denmark
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Canoga Corp., 8955 Sepulveda Blvd., Van Nuys, Calif.
Clough Brengle Co., 6014 N. Broadway, Chicago, Ill.
D & R, Ltd., 402 E. Gutierrez St., Santa Barbara, Calif.
Davon Co., The, Route 10, Livingston, N. J.
Donner Scientific Co., 888 Galindo St., Concord, Calif.
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Federal Mfg. & Engineering Corp., 1055 Stewart St., Garden City, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 8, Ohio
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Intercontinental Dynamics Corp., 170 Coolidge Ave., Englewood, N. J.
International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio
Kay Electric Co., 14 Maple Ave., Pine Brook, N. J.
Lavoie Laboratories, Inc., Matawan-Freehold Rd., Morganville, N. J.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Monson Laboratories, Inc., 207 Greenwich Ave., Stamford, Conn.
Manufacturers Engineering & Equipment Corp., York & Mill Rds., Hatboro, Pa.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Measurements Corp., Boonton, N. J.
Muirhead & Co., Ltd., Beckenham, Kent, England
New London Instrument Co., P. O. Box 189, New London, Conn.
Norrman Laboratories, Ernst, Williams Bay, Wis.
Northeast Scientific Corp., 617 Concord Ave., Cambridge 38, Mass.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
PARSONS CO., RALPH M., ELECTRONICS DIV., 151 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Polarad Electronics Corp., 43-20 34th St., Long Island City, N. Y.
Potter Aeronautical Corp., Route 22, Union, N. J.
Precision Apparatus Co., Inc., 70-31 84th St., Glendale 27, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Ramier Co., 2101 Bryant St., San Francisco 10, Calif.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Sperry Gyroscope Div. of Sperry-Rand Corp., Great Neck, N. Y.
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Tel-Instrument Electronics Corp., 728 Garden St., Carlstadt, N. J.
Telonic Industries, 73 N. 2nd Ave., Beech Grove, Ind.
Trad Electronics Corp., 1000 First Ave., Asbury Park, N. J.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Varo Mfg. Co., Inc., 2201 Walnut St., Garland, Texas
Vectron, Inc., 1620 Trapelo Rd., Waltham 54, Mass.
Walkirt Co., The, 141 W. Hazel St., Inglewood 3, Calif.
Waltham Electronics Corp., 751 Main St., Waltham, Mass.
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.

GENERATORS—Sliding Pulse

BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
Clegg Laboratories Div. of Clegg, Inc., Ridgedale & Hanover Aves., Morristown, N. J.
Norrman Laboratories, Ernst, Williams Bay, Wis.
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
Peerless Instrument Co., Inc., 90-15 Corona Ave., Elmhurst 73, N. Y.
RADIATION INSTRUMENT CO., P. O. Box 733, Silver Spring, Md. ADV. PG. 198
Rutherford Electronics Corp., 3707 S. Robertson Blvd., Culver City, Calif.
Sperry Gyroscope Div. of Sperry-Rand Corp., Great Neck, N. Y.
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telotronics Laboratory, Inc., 84 Kinkel St., Westbury, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140

GENERATORS—Steam

See POWER PLANT EQUIPMENT—Heat Exchangers

GENERATORS—Time Delay

Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Canoga Corp., 8955 Sepulveda Blvd., Van Nuys, Calif.
Clegg Laboratories Div. of Clegg, Inc., Ridgedale & Hanover Aves., Morristown, N. J.
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
Electronic Processes Corp., 2190 Folsom St., San Francisco 10, Calif.
Engineered Electronics Co., 506 E. First St., Santa Ana, Calif.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Haydon Co., A. W., The, 232 N. Elm St., Waterbury, Conn.
Haydon Mfg. Co., 245 E. Elm St., Torrington, Conn.
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Hunter-Bristol Corp., Bristol, Pa.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Panax Equipment, Ltd., 173 London Rd., Micham, Surrey, England
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
Rutherford Electronics Corp., 3707 S. Robertson Blvd., Culver City, Calif.
Sperry Gyroscope Div. of Sperry-Rand Corp., Great Neck, N. Y.
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Telotronics Laboratory, Inc., 84 Kinkel St., Westbury, N. Y.
Walkirt Co., The, 141 W. Hazel St., Inglewood 3, Calif.
Wang Laboratories, Inc., 37 Hurley St., Cambridge 41, Mass.

GENERATORS—Van de Graaff

See ACCELERATORS—Particle

GLASS—High Density

AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Barr & Stroud Ltd., Caxton St., Anniesland, Glasgow, W. 3, Scotland
Chance-Pilkington Optical Works, Pilkington Brothers Ltd., St. Asaph, Flintshire, Great Britain
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Deknatel & Son, Inc., J. A., 96-20 222nd St., Queens Village 8, N. Y.
Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
HAYWARD SCIENTIFIC GLASS CORP., 217 N. Magnolia Ave., Whittier, Calif. ADV. PG. 207
PENBERTHY INSTRUMENT CO., HI-D DIV., 4301 6th Ave., S., Seattle 8, Wash. ADV. PG. 108
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216

GLASS SHIELDING

See VIEWING EQUIPMENT—Shielding Windows

GLASS VIEWING WINDOWS

See VIEWING EQUIPMENT

GLASSWARE—Laboratory

Alco Scientific Div. of A. S. Alco Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Armstrong Cork Co., Lancaster, Pa.
Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y.
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Chicago Apparatus Co., 1735 N. Ashland Ave., Chicago 22, Ill.
Clay-Adams, Inc., 141 E. 25th St., New York 10, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Deknatel & Son, Inc., J. A., 96-20 222nd St., Queens Village 8, N. Y

Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fredericks Co., George E., Bethayres, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Kontes Glass Co., Dept. P–159, Vineland, N. J.
Milwaukee Glass Works, Inc., 2338 N. 30th St., Milwaukee, Wis.
Microchemical Specialty Co., 1834 University Ave., Berkeley 3, Calif.
Pacific Nuclear Co., 5439 Geary Blvd., San Francisco 21, Calif.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Research Specialties Co., 2005 Hopkins St., Berkeley 7, Calif.
Resitron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.
Thomas Co., Arthur A., Vine St. at Third, Box 779, Philadelphia 5, Pa.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Townson & Mercer, Ltd., Croydon, Surrey, England
Wakefield Industries, Inc., 5107 W. Grove St., Skokie, Ill.
Wheaton Co., T. C., Millville, N. J.
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.
Will Corp., Box 1050, Rochester 3, N. Y.
Yonkers Laboratory Supply Co., 70 Palisades Ave., Yonkers 2, N. Y.

GLASS-WORKING APPARATUS

Aloe Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Atomic Laboratories, 3086 Claremont Ave., Berkeley, Calif.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.
Litton Engineering Labs., P. O. Box 949, Grass Valley, Calif.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Pittsburgh Plate Glass Co., 1 Gateway Center, Pittsburgh 22, Pa.
Research Vacuum Supply Co., 6712 N. Clark St., Chicago, Ill.
Steiner-Ives Co., Springfield Rd., Union, N. J.
Stewart Engineering Co., P. O. Box 277, Soquel, Calif.
Townson & Mercer, Ltd., Croydon, Surrey, England
Wakefield Industries, Inc., 5107 W. Grove St., Skokie, Ill.

GLOVE BOXES

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Blickman Co., S., 7900 Gregory Ave., Weehawken, N. J.
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230–11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hamilton Mfg. Co., Two Rivers, Wis.
Harlss, Granta Terrace, Stapleford, Cambridge, England
KEWAUNEE MFG. CO., 5083 S. Center St., Adrian, Mich. ADV. PG. 174
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Townson & Mercer, Ltd., Croydon, Surrey, England
Vacuum Specialties Co., Inc., 34 Linden St., Somerville, Mass.
Warren Corp., The, 2901 Brighton Rd., Pittsburgh 12, Pa.

GLOVES—Dry Box

Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Blickman Co., S., 7900 Gregory Ave., Weehawken, N. J.
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230–11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hamilton Mfg. Co., Two Rivers, Wis.
Harlss, Granta Terrace, Stapleford, Cambridge, England
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
Pioneer Rubber Co., Tiffin Rd., Willard, Ohio
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Surety Rubber Co., N. High St., Carrollton, Ohio
Townson & Mercer, Ltd., Croydon, Surrey, England

GOGGLES—Safety

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y.
American Optical Co., 28 Mechanic St., Southbridge, Mass.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Bullard Co., E. D., 2680 Bridgeway, Sausalito, Calif.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
General Scientific Equipment Co., 7516 Limekiln Pike, Philadelphia 50, Pa.
Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
Standard Safety Equipment Co., 232 W. Ontario St., Chicago, Ill.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

GRAPHITE

Acheson Colloids Co., Div. of Acheson Industries, Inc., 1631 Washington Ave., Port Huron, Mich.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delanium Graphite Co., 134 Elmora Ave., Elizabeth, N. J.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Falls Industries, Inc., 31857 Aurora Rd., Solon, Ohio
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Great Lakes Carbon Corp., 18 E. 48th St., New York, N. Y.
HURON INDUSTRIES, P. O. Box 557, Port Huron, Mich. ADV. PG. 205
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Speer Carbon Co., St. Marys, Pa.
United Carbon Products Co., Inc., P. O. Box 269, Bay City, Mich.
U. S. Graphite Co., Div. of The Wickes Corp., Holland Ave., Saginaw, Mich.

HEALTH PHYSICS DESIGN & PROCEDURES

See SERVICES

HEAT EXCHANGERS

See POWER PLANT EQUIPMENT

HEATERS—Electric

Acme Electric Heating Co., Inc., 1205 Washington St., Boston, Mass.
Aero Research Instrument Co., 315 N. Aberdeen St., Chicago 7, Ill.
Ambory Corp., 21320 Stephenson, Hazel Park, Mich.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34–01 30th St., Long Island City 6, N. Y. ADV. PG. 181
Borolite Corp., 320 Yonkers Ave., Yonkers, N. Y.
Carborundum Co., Globar Div., Hyde Park Blvd., Niagara Falls, N. Y.
Connecticut Hard Rubber Co., New Haven 9, Conn.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Cox & Co., Inc., 115 E. 23rd St., New York 10, N. Y.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Glas-Col Apparatus Co., 711 Hulman St., Terre Haute, Ind.
Hevi-Duty Electric Co., 2040 W. Wisconsin Ave., Milwaukee 1, Wis.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Industrial Engineering & Equipment Co., 711 S. Theresa, St. Louis 3, Mo.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Labline, Inc., 3070–82 W. Grand Ave., Chicago 22, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Lyndon Brothers, Inc., 85 Zabriskie St., Hackensack, N. J.
Marine Electric Corp., 600 Fourth Ave., Brooklyn, N. Y.
Modern Laboratory Equipment Co., 1809–11 First Ave., New York 28, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Thermo Electric Mfg. Co., 465 Huff, Dubuque, Iowa
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Turbine Equipment Co., Hynes Electric Heating Div., Box 578, Westfield, N. J.
Vulcan Electric Co., 88 Holten St., Danvers, Mass.
Watlow Electric Mfg. Co., 1376 Fregusen Ave., St. Louis 14, Mo.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Wiegand Co., Edwin L., 7895 Thomas Blvd., Pittsburgh 8, Pa.
Will Corp., Box 1050, Rochester 3, N. Y.

HEATERS—Immersion

Acme Electric Heating Co., Inc., 1205 Washington St., Boston, Mass.
Aero Research Instrument Co., 315 N. Aberdeen St., Chicago 7, Ill.
Ambory Corp., 21320 Stephenson, Hazel Park, Mich.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Cox & Co., Inc., 115 E. 23rd St., New York 10, N. Y.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Industrial Engineering & Equipment Co., 711 S. Theresa, St. Louis 3, Mo.
Labline, Inc., 3070–82 W. Grand Ave., Chicago 22, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Metal & Thermit Corp., Rahway, N. J.
Modern Laboratory Equipment Co., 1809–11 First Ave., New York 28, N. Y.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Syntron Co., 355 Lexington, Homer City, Pa.
Thermal American Fused Quartz Co., 18–20 Salem St., Dover, N. J.
Turbine Equipment Co., Hynes Electric Heating Div., Box 578, Westfield, N. J.
United Aircraft Products, Inc., 1116 Bolender, Dayton, Ohio
Vulcan Electric Co., 88 Holten St., Danvers, Mass.
Watlow Electric Mfg. Co., 1376 Fergusen Ave., St. Louis 14, Mo.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Wiegand Co., Edwin L., 7895 Thomas Blvd., Pittsburgh 8, Pa.

HEATERS—Induction

Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Alloys Unlimited, Inc., 44–18 Vernon Blvd., Long Island City 1, N. Y.
Barker & Williamson, Inc., Canal & Beaver, Bristol, Pa.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Erdco Engineering Corp., Addison, Ill.
GENERAL ELECTRIC CORP., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Lepel High Frequency Lab., Inc., 55th St. & 37th Ave., Woodside 77, N. Y.
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Marion Electrical Instrument Co., Greiner Field, Manchester, N. H.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Scientific Electric Corp., 105–119 Monroe St., Garfield, N. J.

TULLAMORE ELECTRONICS LABS., 4055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 65–66, 168, 169

HEATERS—Infra Red

CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Syntron Co., 355 Lexington, Homer City, Pa.
Wiegand Co., Edwin L., 7095 Thomas Blvd., Pittsburgh 8, Pa.

HEATERS—Micro

See MICROCHEMICAL EQUIPMENT

HEAVY WATER

See WATER—Heavy

HOODS—Exhaust

See FUME HOODS

HOSE—Acid-Resisting

Aeroquip Corp., 300 S. East St., Jackson, Mich.
All-Stainless Inc., 36 Rugg Road, Allston 34, Mass.
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
Chicago Gasket Co., 1271 W. North Ave., Chicago 22, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Garlock Packing Co., The, Palmyra, N. Y.
Goodyear Tire & Rubber Co., Akron, Ohio
Haveg Industries, Inc., Halocarbon Div., 950 Greenbank Rd., Wilmington 8, Del.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington 11, N. J.
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Polymer Corp., The, Reading, Pa.
Republic Rubber Div. of Lee Rubber & Tire Corp., Youngstown, Ohio
Resistoflex Corp., Roseland, N. J.
Sparta Mfg. Co., Div. of U. S. Ceramic Tile Co., Dover, Ohio
Titeflex, Inc., 502 Hendee St., Springfield 4, Mass.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Uranium Ore & Supply Co., 546 W. Lake St., Chicago 6, Ill.
Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.
Weatherhead Co., The, 128 W. Washington Blvd., Fort Wayne, Ind.

HOSE—Metal, Flexible

Aeroquip Corp., 300 S. East St., Jackson, Mich.
All-Stainless Inc., 36 Rugg Rd., Allston 34, Mass.
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
American Brass Co., Waterbury 20, Conn.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Breeze Corporations, Inc., 700 Liberty Ave., Union, N. J.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Flexaust Co., 100 Park Ave., New York 7, N. Y.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Hallett Mfg. Co., 5910 Bowcraft Ave., Los Angeles 16, Calif.
Johnson Corp., 809 Wood St., Three Rivers, Mich.
Titeflex, Inc., 502 Hendee St., Springfield 4, Mass.
Uranium Ore & Supply Co., 546 W. Lake St., Chicago 6, Ill.
Zallea Brothers, 800 Locust St., Wilmington, Del.

HOSE—Plastic

Aeroquip Corp., 300 S. East St., Jackson, Mich.
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
American Agile Corp., P. O. Box 168, Bedford, Ohio
Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
Chicago Gasket Co., 1271 W. North Ave., Chicago 22, Ill.
Clay-Adams, Inc., 141 E. 25th St., New York 10, N. Y.
Flexaust Co., 100 Park Ave., New York 7, N. Y.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Garlock Packing Co., The, Palmyra, N. Y.
Goodyear Tire & Rubber Co., Akron, Ohio
Haveg Industries, Inc., Halocarbon Div., 950 Greenbank Rd., Wilmington 8, Del.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington 11, N. J.
Polymer Corp., The, Reading, Pa.
Resistoflex Corp., Roseland, N. J.
Rex Corp., The, Hayward Rd., West Acton, Mass.
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
Sparta Mfg. Co., Div. of U. S. Ceramic Tile Co., Dover, Ohio
Titeflex, Inc., 502 Hendee St., Springfield 4, Mass.
Uranium Ore & Supply Co., 546 W. Lake St., Chicago 6, Ill.
Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.
Westlake Plastics Co., West Lenni Rd., Lenni Mills, Pa.

HOSE—Vacuum, Flexible

See also VACUUM EQUIPMENT

Aeroquip Corp., 300 S. East St., Jackson, Mich.
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Flexaust Co., 100 Park Ave., New York 7, N. Y.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Goodyear Tire & Rubber Co., Akron, Ohio
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
Republic Rubber Div. of Lee Rubber & Tire Corp., Youngstown, Ohio
Research Vacuum Supply Co., 6712 N. Clark St., Chicago, Ill.
Resistoflex Corp., Roseland, N. J.
U. S. Rubber Co., 1230 Avenues of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Uranium Ore & Supply Co., 546 W. Lake St., Chicago 6, Ill.

HOT CELLS—Nuclear

Aerojet-General Nucleonics, San Ramon, Calif.
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 3450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Farrel Birmingham Co., Inc., Ansonia, Conn.
Harty Co., Inc., R. V., 1433 Sloman Ave., Detroit 11, Mich.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Nuclear Engineering, Ltd., Greenwich Metal Works, London, S. E. 7, England
Nucledyne Corp., Sub. of Cook Electric Co., 8100 N. Monticello Ave., Skokie, Ill.
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216

HOUSINGS—Metal

See CONSOLES and CABINETS

HUMIDIFIERS

Abbeon Supply Co., 179–15 Jamaica Ave., Jamaica 32, N. Y.
Air & Refrigeration Corp., 439 Madison Ave., New York 17, N. Y.
American Blower Div., American Radiator & Standard Corp., 8111 Tireman Ave., Dearborn, Mich.
Carrier Corp., 300 S. Geddes St., Syracuse 1, N. Y.
Ellis and Watts Products, Inc., Monroe at Spencer, Cincinnati 36 (Rossmoyne), Ohio
Grinnell Corp., 260 W. Exchange St., Providence 1, R. I.
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Powers Regulator Co., 3400 Oakton, Skokie, Ill.
Research Products Corp., 1015 E. Washington Ave., Madison, Wis.
Worthington Corp., Harrison, N. J.

HYDRAULIC MECHANISMS

Aerojet-General Corp. Arctitect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Bloch Industries, Inc., 10 Indian Spring Rd., Cranford, N. J.
Carter Controls Inc., 2800 Bernice Rd., Lansing, Mich.
Denison Engineering Div., American Brake Shoe Co., 1160 Dublin Rd., Columbus 16, Ohio
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
FORD INSTRUMENT CO., DIV. OF SPERRY-RAND CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 125
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hanna Engineering Works, 1767 N. Elston Ave., Chicago 22, Ill.
Hannifin Corp., 619D S. Wolf Rd., Des Plaines, Ill.
Kahn & Co., Inc., 541 Windsor St., Hartford 1, Conn.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
L & S MACHINE CO., INC., P. O. Box 317, R. D. #2, Latrobe Pa. ADV. PG. 57
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Modern Laboratory Equipment Co., 1809–11 First Ave., New York 28, N. Y.
Muirhead & Co., Ltd., Beckenham, Kent, England
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
Trimount Instrument Co., 3119 W. Lake St., Chicago 12, Ill.
Valcor Engineering Corp., 365 Carnegie Ave., Kenilworth, N. J.
Vickers Inc., Div. of Sperry-Rand Corp., Marine & Ordnance Dept., Waterbury 20, Conn.

HYGROMETERS

Abbeon Supply Co., 179–15 Jamaica Ave., Jamaica 32, N. Y.
Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Burton Mfg. Co., 2520 Colorado Ave., Santa Monica, Calif.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
General Scientific Equipment Co., 7516 Limekiln Pike, Philadelphia 50, Pa.
H-B Instrument Co., American & Bristol Sts., Philadelphia 40, Pa.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Illinois Testing Labs., 420 N. LaSalle St., Chicago, Ill.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
LENNARD CO., INC., P. M., 1 Hanson Place Brooklyn 17, N. Y. ADV. PG. 182, 208
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Negretti & Zambra, Ltd., 122 Regent St., London, W. 1, England
Numberg Thermometer Co., Inc., 124 Livingston St., Brooklyn, N. Y.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Sordex, Inc., 12 Bowdoin Square, Boston 14, Mass.
Tri-R Instruments, 24–15 44th Rd., Long Island City 1, N. Y.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.

INDICATORS

See CONTROLS
DETECTORS
GAGES
METERS

INDICATORS—Control Rod Position

Advance Instrument Corp., 1109 Sixth Ave., Neptune, N. J.
Aerojet-General Nucleonics, San Ramon, Calif.
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
Anatron Div., Endevco Corp., 161 E. California, Pasadena, Calif.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bowmar Instrument Corp., 2413 Pennsylvania Ave., Fort Wayne, Ind.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.

FORD INSTRUMENT CO., DIV. OF SPERRY-RAND CORP., 31–10 Thomson Ave., Long Island 1, N. Y. ADV. PG. 125
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 34, 35
General Regulator Corp., 165 Broadway, New York 6, N. Y.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Peerless Instrument Co., Inc., 90–15 Corona Ave., Elmhurst 73, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

INDICATORS—Flow

See METERS—Flow

INDICATORS—Radiation

See CHAMBERS, Ionization; COUNTERS; G-M APPARATUS; SCALERS etc.

INDICATORS—Timing

See TIMERS

INDICATORS—Valve Position

American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
B-I-F Industries, Inc., 530-D Harris Ave., Providence 1, R. I.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Electric Tachometer Corp., 68th & Upland Sts., Philadelphia 42, Pa.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fairbanks Co., The, 393 Lafayette St., New York 3, N. Y.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fredericks Co., George E., Bethayres, Pa.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., Boston Div., 1400 Soldiers Field Rd., Boston 35, Mass.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Westinghouse Electric Corp., Atomic Equipment Div., Cheswick, Pa.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

INDUCTANCES

Adler Electronics, Inc., 1 La Fevre Lane, New Rochelle, N. Y.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Amp, Incorporated, Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
Babcock Relays, Inc., 1640 Monrovia Ave., Costa Mesa, Calif.
Communication Accessories Co., Lee's Summit, Mo.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
D & R Ltd., 402 E. Gutierrez St., Santa Barbara, Calif.
DeWitt Development Co., 3008 W. 127th St., Blue Island, Ill.
E S C Corp., 534 Bergen Blvd., Palisades Park, N. J.
Essex Electronics, Springfield Ave., Berkeley Heights, N. J.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 49, Mass.
Grand Transformers, Inc., Grand Haven, Mich.
Highland Engineering Co., 91 Magnolia Ave., Westbury, N. Y.
Jeffers Electronics Div., Speer Carbon Co., DuBois, Pa.
K-V Transformer Corp., 20 E. Franklin St., Danbury, Conn.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Minitron Corp., 5 Oliver St., Newark 2, N. J.
Muirhead & Co., Ltd., Beckenham, Kent, England
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
Raypar, Inc., 7800 W. Addison St., Chicago 34, Ill.
Redman Electronics Corp., P. O. Box 72, Thompsonville, Conn.
SPELLMAN TELEVISION CO., INC., 3029 Webster Ave., Bronx 67, N. Y. ADV. PG. 202
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Terwilco Electronics, Inc., 1090 Morris Ave., Union, N. J.
Transformers, Inc., 200 Stage Rd., Vestal, N. Y.
United Transformer Corp., 150 Varick St., New York 13, N. Y.

INSTRUMENT PARTS—Precision

Abrams Instrument Corp., 600–620 E. Shiawassee St., Lansing, Mich.
Aerojet-General Nucleonics, San Ramon, Calif.
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
ANTON ELECTRONICS LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Assembly Products, Inc., Chesterland 6, Ohio
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Barnes Development Co., 213 W. Baltimore Pike, Lansdowne, Pa.
Belock Instrument Corp., 111–01 14th Ave., College Point, N. Y.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
Century Electronics & Instruments, Inc., P. O. Box 6216, Tulsa 17, Okla.
Deknatel & Son, Inc., J. A., 96–20 222nd St., Queens Village 8, N. Y.
Elchner Instruments Co., L. C., 19 Sebago St., Clifton, N. J.
Electro-Measurements, Inc., 7524 S.W. Macadam Ave., Portland 1, Ore.
Elm Laboratories, 10 Washington Ave., Hastings-on-Hudson, N. Y.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Fredericks Co., George E., Bethayres, Pa.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
Fulton Sylphon Division Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N.E., Minneapolis, Minn. ADV. PG. 34, 35
General Radio Co., 275 Massachusetts Ave., Cambridge 49, Mass.
Graflex, Inc., 154 Clarissa St., Rochester 8, N. Y.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 150
Leland Instruments, Ltd., 22–23 Millbank, London, Westminster, S. W. 1, England
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Nay Co., J. M., Drawer 990, Hartford, Conn.
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
Nuclear Science Associates, 55 Manor Drive, Newark 6, N. J.
Partlow Corp., The, Dept. NBG-58, New Hartford, N. Y.
Peerless Instrument Co., Inc., 90–15 Corona Ave., Elmhurst 73, N. Y.
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
Research Development Manufacture, 429 E. Callow St., Philadelphia 44, Pa.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Spaulding Fibre Co., 310 Wheeler St., Tonawanda, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Trimount Instrument Co., 3119 W. Lake St., Chicago 12, Ill.
Ultradyne Engineering Labs., Inc., P. O. Box 3008 Albuquerque, N. M.
U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

INSULATION—Thermal

Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Auburn Mfg. Co., The, 500 Stack St., Middletown, Conn.
Biggs Co., Carl H., 2255 Barry Ave., West Los Angeles 64, Calif.
Deknatel & Son, Inc., J. A., 96–20 222nd St., Queens Village 8, N. Y.
Dow Chemical Co., Midland, Mich.
Dow Corning Corp., Midland, Mich.
Du-Co Ceramics Co., Box 587, Butler 8, Pa.
Eagle-Picher Co., Cincinnati, Ohio
Hunter-Bristol Corp., Bristol, Pa.
Insul-Mastic Corp. of America, 7750 W. 61st Place, Summit, Ill.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
L. O. F. Glass Fibers Co., 1810 Madison Ave., Toledo 1, Ohio
Metallizing Engineering Co., 1101 Prospect Ave., Westbury, N. Y.
Mundet Cork Corp., 7101 Tonnelle Ave., North Bergen, N. J.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
National Vulcanized Fibre Co., Wilmington 99, Del.
Napco Chemical Co., 15 Essex St., Harrison, N. J.
Permacel Tape Corp., New Brunswick, N. J.
Raytheon Mfg. Co., Ceramic Sales, Foundry Ave., Waltham, Mass.
Sauereisen Cements Co., Sauereisen Bldg., Pittsburgh 15, Pa.
Thermal Refractories Corp., 4501 Dell Ave., North Bergen, N. J.
Thermo Electric Mfg. Co., 465 Huff, Dubuque, Iowa
Thompson Fiber Glass Co., H. I., 1733 Cordova St., Los Angeles 7, Calif.
Ther Ceramics, Inc., 225 Belleville Ave., Bloomfield, N. J.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Wood & Co., Charles S., 88 Main St., West Orange, N. J.

INSULATORS & INSULATION—Electrical

ALITE DIV. OF U. S. STONEWARE CO., P. O. Box 119, Orrville, Ohio. ADV. PG. 49
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
AMERICAN LAVA CORP., STEATITE DIV., Manufacturers Rd., Chattanooga 5, Tenn. ADV. PG. 52
Asheville-Schoonmaker Mica Co., Inc., 900 Jefferson Ave., Newport News, Va.
Auburn Mfg. Co., The, 500 Stack St., Middletown, Conn.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass.
Centralab Division of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Ceramaseal Co., Box 25, New Lebanon Center, N. Y.
Connecticut Hard Rubber Co., New Haven 9, Conn.
Continental-Diamond Fibre Corp., Newark, Del.
Deknatel & Son, Inc., J. A., 96–20 222nd St., Queens Village 8, N. Y.
Dow Corning Corp., Midland, Mich.
Du-Co Ceramics Co., Box 587, Butler 8, Pa.
Electro Technical Products Div. of Sun Chemical Corp., 113 E. Centre St., Nutley, N. J.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Emerson Plastics Corp., 1383 Seabury Ave., Bronx 61, N. Y.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Erie Resistor Corp., 639 W. 12th St., Erie, Pa.
Frenchtown Porcelain Co., Frenchtown, N. J.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
General Electric Co., Laminated Products Dept., Coshocton, Ohio
Hallett Mfg. Co., 5910 Bowcroft Ave., Los Angeles 16, Calif.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington 11, N. J.
Isolantite Mfg. Corp., Stirling, N. J.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Kirchberger & Co., Inc., M., 82–92 W. Forest Ave., Englewood, N. J.
Lapp Insulator Co., Inc., 40 Gilbert St., LeRoy, N. Y.
Mica Insulator Co., 797 Broadway, Schenectady 1, N. Y.
Micanite & Insulators Co., Ltd., The, Blackhorse Lane, Walthamstow, London, E. 17, England
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Mitronics, Inc., 1290 Central Ave., Hillside, N. J.
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.
National Vulcanized Fibre Co., Wilmington 99, Del.
NORTON CO., 1 New Bond St., Worcester 6, Mass. ADV. PG. 37
Penn Fibre & Specialty Co., 2020 E. Westmoreland St., Philadelphia 34, Pa.
Permacel Tape Corp., New Brunswick, N. J.
Polymer Corp., The, Reading, Pa.
Porcelain Products, Inc., 422 Sandusky St., Findlay, Ohio
Raytheon Mfg. Co., Ceramic Sales, Foundry Ave., Waltham, Mass.
Saxonburg Ceramics, Saxonburg, Pa.
Steward Mfg. Co., D. M., E. 36th St., Chattanooga 1, Tenn.

Stupakoff Division of The Carborundum Co., Latrobe, Pa.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thor Ceramics, Inc., 225 Belleville Ave., Bloomfield, N. J.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburg 30, Pa. ADV. PG. 63–66, 168, 169
Wheaton Co., T. C., Millville, N. J.

INSULATORS—Plastic

Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Auburn Mfg. Co., The, 500 Stack St., Middletown, Conn.
Biggs Co., Carl H., 2255 Barry Ave., West Los Angeles 64, Calif.
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass.
Chicago Gasket Co., 1271 W. North Ave., Chicago 22, Ill.
Continental-Diamond Fibre Corp., Newark, Delaware
Dow Corning Corp., Midland, Mich.
Emerson Plastics Corp., 1383 Seabury Ave., Bronx 61, N. Y.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
Haveg Industries, Inc., Helocarbon Div., 950 Greenbank Rd., Wilmington 8, Del.
Industrial Devices, Inc., 982 River Rd., Edgewater, N. J.
Kirchberger & Co., Inc., M. 82–92 W. Forest Ave., Englewood, N. J.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Micromold Corp., 1 School St., Yonkers, N. Y.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
National Vulcanized Fibre Co., Wilmington 99, Del.
Penn Fibre & Specialty Co., 2020 E. Westmoreland St., Philadelphia 34, Pa.
Permacel Tape Corp., New Brunswick, N. J.
Polymer Corp., The, Reading, Pa.
Resdel Corp., P. O. Box 217, Rio Grande, N. J.
Shambon & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
Synthane Corp., River Rd., Oaks, Pa.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thor Ceramics, Inc., 225 Belleville Ave., Bloomfield, N. J.
U. S. Gasket Co., 600 N. 10th St., Camden 1, N. J.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.

INTERLOCK SYSTEMS

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
R. & I. E. Equipment Div. of I-T-E Circuit Breaker Co., Greensburg, Pa.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.

ION EXCHANGE EQUIPMENT

Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Barnstead Still & Sterilizer Co., 84 Lanesville Terrace, Boston 31, Mass.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Chem-Pure Service Co., 762 Industrial Rd., San Carlos, Calif.
Dearborn Chemical Corp., 375 Merchandise Mart, Chicago 54, Ill.
Dorr-Oliver, Inc., Barry Place, Stamford, Conn.
ELGIN SOFTENER CORP., 179 S. Grove Ave., Elgin, Ill. ADV. PG. 110
Fischer & Porter Co., 30 Warminster Rd., Hatboro, Pa.
Graver Water Conditioner Co., 216 W. 14th St., New York 11, N. Y.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Illinois Water Treatment Co., 858 Cedar St., Rockford, Ill.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Inflico, Inc., P. O. Box 5033, Tucson, Ariz.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 52
PENFIELD MFG. CO., INC., 19 High School Ave., Meriden, Conn. ADV. PG. 159
Permutit Co., 50 W. 44th St., New York 36, N. Y.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Scientific Equipment Co., 23 N. Hawthorne Lane, Indianapolis 19, Ind.
Trionics Corp., P. O. Box 548, Madison 1, Wis.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

ION GAUGE TUBES

See GAGES—Vacuum

IONIZATION CHAMBERS

See CHAMBERS—Ionization

IRRADIATION—Accelerator

See SERVICES

IRRADIATION—Isotopic

See SERVICES

IRRADIATION—Reactor

See SERVICES

IRRADIATORS—Medical

APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
BAR-RAY PRODUCTS, INC., 205 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Nuclear Engineering, Ltd., Greenwich Metal Works, London, S. E. 7, England
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

ISOTOPE-LABELED COMPOUNDS

Abbott Laboratories, North Chicago, Ill.
Aerojet-General Nucleonics, San Ramon, Calif.
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Baker & Adamson Products, General Chemical Div. of Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
Bios Laboratories, Inc., 17 W. 60th St., New York 23, N. Y.
Cal-Rad Inc., 1208 W. Burbank Blvd., Burbank, Calif.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
Merck & Co., Ltd., 560 De Courcelle St., Montreal 3, P. Q., Canada
NEW ENGLAND NUCLEAR CORP., 575 Albany St., Boston 18, Mass. ADV. PG. 214
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Orlando Research Inc., P. O. Box 6491, Orlando, Fla.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Research Specialties Co., 2005 Hopkins St., Berkeley 7, Calif.
Schwarz Laboratories, Inc., 230 Washington St., Mt. Vernon, N. Y.
Texas Research Foundation, Renner, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trionics Corp., P. O. Box 548, Madison 1, Wis.
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120

ISOTOPES—Radioactive

Abbott Laboratories, North Chicago, Ill.
Aerojet-General Nucleonics, San Ramon, Calif.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angles 34, Calif. ADV. PG. 206
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 60B
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Baker & Adamson Products, General Chemical Div. of Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
Bios Laboratories, Inc., 17 W. 60th St., New York 23, N. Y.
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Dextron Engineering, 1 Winslow St., Redwood City, Calif.
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Martin Co., The, Nuclear Div., Baltimore 3, Md.
Merck & Co., Ltd., 560 De Courcelle St., Montreal 3, P. Q., Canada
NEW ENGLAND NUCLEAR CORP., 575 Albany St., Boston 18, Mass. ADV. PG. 214
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Consultants, Inc., 9842 Manchester Rd., St. Louis 19, Mo.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Orlando Research Inc., P. O. Box 6491, Orlando, Fla.
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
Texas Research Foundation, Renner, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
U. S. RADIUM CORP., Morristown, N. J. ADV. PG. 163
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.

ISOTOPES—Stable

Abbott Laboratories, North Chicago, Ill.
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Bios Laboratories, Inc., 17 W. 60th St., New York 23, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isomet Corp., 118 Union St., Palisades Park, N. J.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
Merck & Co., Ltd., 560 De Courcelle St., Montreal 3, P. Q., Canada
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
WEIZMAN INSTITUTE OF SCIENCE, Rehovot, Israel. ADV. PG. 203

ISOTOPES—Standards

See RADIOACTIVITY STANDARDS

LABORATORY APPARATUS

See Also Specific Headings

Acme Electric Heating Co., Inc., 1205 Washington St., Boston, Mass.
Adkins & Morrill, Sudbury, Mass.
Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
Aerojet-General Nucleonics, San Ramon, Calif.

Aldon Systems Co., Aldon Research Center, Westboro, Mass.
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
Aloe Scientific Div. of A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark, N. J.
Amersil Co., Inc., 685 Ramsey Ave., Hillside, N. J.
Atomic Laboratories, 3086 Claremont Ave., Berkeley, Calif.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Bishop & Co., J., Platinum Works, Malvern, Pa.
Brinkman Instruments Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Bruel & Kjaer, Naerum, Denmark
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Burrell Corp., 2223 Fifth Ave., Pittsburgh 19, Pa.
Carver, Inc., Fred S., 1 Chatham Rd., Summit, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Chandler & Stedman, 398 Newton St., Waltham 54, Mass.
Chicago Apparatus Co., 1735 N. Ashland Ave., Chicago 22, Ill.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Clay-Adams, Inc., 141 E. 25th St., New York 10, N. Y.
Coleman Instruments, Inc., 318 Madison St., Maywood, Ill.
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230–11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Deknatel & Son, Inc., J. A., 96–20 222nd St., Queens Village 8, N. Y.
Denison Engineering Div., American Brake Shoe Co., 1160 Dublin Rd., Columbus 16, Ohio
Elmes Engineering Div., American Steel Foundries, 1150 Tennessee Ave., Cincinnati 29, Ohio
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
Fredericks Co., George E., Bethayres, Pa.
Goertner Scientic Corp., 1237 Wrightwood Ave., Chicago, Ill.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
GENERAL ATOMIC DIV. OF GENERAL DYNAMICS CORP., P. O. Box 608, San Diego 12, Calif. ADV. PG. 111
General Biochemicals, Inc., Laboratory Park, Chagrin Falls, Ohio
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Harlss, Granta Terrace, Stapleford, Cambridge, England
Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
Hooper Chemical Corp., P. O. Box 313, Rutherford, N. J.
Hughes Products, Los Angeles 45, Calif.
Humboldt Mfg. Co., 2014 N. Whipple St., Chicago 47, Ill.
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.
International Engineering, Inc., 1200 Bolander Ave., Dayton, Ohio
Isotope Developments Ltd., Boenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Kinetic Instrument Co., 3250 Skokie Valley Rd., Highland Park, Ill.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 150
Kontes Glass Co., Dept. P-159, Vineland, N. J.
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill.
LaPine & Co., Arthur S., 6001 S. Knox Ave., Chicago 29, Ill.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Menlo Research Laboratory, 338 Phelan Ave., San Jose, Calif.
Metalab Equipment Co., Div. of Norbute Corp., 282 Duffy Ave., Hicksville, N. Y.
Mica Instrument Co., 82 S. Trowbridge St., Cambridge 39, Mass.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Milwaukee Glass Works, Inc., 2338 N. 30th St., Milwaukee, Wis.
Minneapolis-Honeywell Regulator Co., Rubicon Instruments, Ridge Ave. at 35th St., Philadelphia 32, Pa.
Modern Laboratory Equipment Co., 1809–11 First Ave., New York 28, N. Y.
Muirhead & Co., Ltd., Beckenham, Kent, England
Neutronics Research Co., 165 Lake St., Waltham, Mass.
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
NORTON CO., 1 New Bond St., Worcester 6, Mass. ADV. PG. 37
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 181
Nurnberg Thermometer Co., Inc., 124 Livingston St., Brooklyn, N. Y.
Parisier & Co., Maurice I., 741–745 Washington St., New York 14, N. Y.
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Process & Instruments, 15 Stone Ave., Brooklyn 23, N. Y.
Protectoseal Co., 1920 S. Western Ave., Chicago 8, Ill.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Raschor & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Resitron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
Scientific Instruments Div. of Beckman Instruments, Inc., Fullerton, Calif.
Servomechanisms, Inc., 12500 Aviation Blvd., Hawthorne, Calif.
Servall, Inc., Ivan, P. O. Box 230, Pearl St., Norwalk, Conn.
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.
Stoelting Co., C. H., 424 N. Homan Ave., Chicago 24, Ill.
Sturtevant Mill Co., Park & Clayton Sts., Boston 22, Mass.
Superior Electric Co., 83 Laurel St., Bristol, Conn.
Technical Measurement Corp., 140–142 State St., New Haven, Conn.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thermal American Fused Quartz Co., Inc., 18–20 Salem St., Dover, N. J.
Thomas Co., Arthur H., Vine St. at Third, Box 779, Philadelphia 5, Pa.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Townson & Mercer, Ltd., Croydon, Surrey, England
Tri-R Instruments, 24–15 44th Rd., Long Island City 1, N. Y.
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.
Will Corp., Box 1050, Rochester 3, N. Y.
Winslow Co., Inc., 9 Liberty St., Newark 2, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

LABORATORY ROLLING MILLS

See ROLLING MILLS

LAUNDRY EQUIPMENT FOR CONTAMINATED CLOTHING

AMERICAN LAUNDRY MACHINERY CO., Norwood 12, Ohio. ADV. PG. 124
General Radiological, Ltd., 15–18 Clipstone St., London W. 1, England

LAUNDRY SERVICE FOR CONTAMINATED CLOTHING

See SERVICES

LEAK TESTERS

See DETECTORS—Leak

LEAK TESTING

See SERVICES

LIGHT SOURCE—Radioactive

BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
NEW ENGLAND NUCLEAR CORP., 575 Albany St., Boston, Mass. ADV. PG. 214
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
U. S. RADIUM CORP., Morristown, N. J. ADV. PG. 163

LIQUEFIERS—Gas

See CRYOSTATS

LOOPS—Test

Aerojet-General Nucleonics, San Ramon, Calif.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 113
Combustion Engineering, Inc., 200 Madison Ave., New York 16, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
WHEELER MFG. CO., C H., 19th & Lehigh, Philadelphia 32, Pa. ADV. PG. 112

LUBRICANTS

Acheson Colloids Co., Div. of Acheson Industries, Inc., 1631 Washington Ave., Port Huron, Mich.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
CRAWFORD FITTING CO., 884 E. 10th St., Cleveland 10, Ohio. ADV. PG. 106
Custom Lubricant Co., 743 Dwight Way, Berkeley 10, Calif.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Dow Corning Corp., Midland, Mich.
Hooker Electrochemical Co., 4721 Buffalo Ave., Niagara Falls, N. Y.
HURON INDUSTRIES, P. O. Box 557, Port Huron, Mich. ADV. PG. 205
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Monsanto Chemical Co., Plastics Div., 600 Monsanto Ave., Springfield 2, Mass.
Pure Oil Co., 35 E. Wacker, Chicago, Ill.
Research Vacuum Supply Co., 6712 N. Clark St., Chicago, Ill.
Shell Oil Co., Lubricants Div., 50 W. 50th St., New York, N. Y.
Silicones Division, Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Texas Research Foundation, Renner, Texas
Thomas Co., Arthur A., Vine St. at Third, Box 779, Philadelphia 5, Pa.
U. S. Graphite Co., Div. of The Wickes Corp., Holland Ave., Saginaw, Mich.
Union Carbide Chmeicals Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Varnitan Co., 416 N. Varney St., Burbank, Calif.

MACHINES—Swaging

Fenn Manufacturing Co., The, 200 Fenn Rd., Newington, Conn.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Weatherhead Co., The, 128 W. Washington Blvd., Fort Wayne, Ind.

MAGNETS

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Arnold Engineering Co., Marengo, Ill.
Atomic Laboratories, 3086 Claremont Ave., Berkeley, Calif.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
General Ceramics Corp., 250 Crows Mill Rd., Keasbey, N. J.
General Electric Co., Metallurgical Products Dept., 11139 E. Eight Mile Drive, Detroit 32, Mich.
General Scientific Equipment Co., 7516 Limekiln Pike, Philadelphia 50, Pa.
Indiana Steel Products Co., The, Valparaiso, Ind.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Knopp, Inc., 1307 66th St., Emeryville 8, Calif.
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
Pacific Electric Motor Co., 1009 66th Ave., Oakland 21, Calif.

Parisier & Co., Maurice I., 741–745 Washington St., New York 14, N. Y.
Permag Corp., 214 Toffe Place, Brooklyn 5, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Process & Instruments, 15 Stone Ave., Brooklyn 23, N. Y.
Steward Mfg. Co., D. M., E. 36th St., Chattanooga 1, Tenn.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thermo Materials Inc., 4040 Campbell Ave., Manis Park, Ill.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

MANIPULATORS—Remote

See also TONGS—Handling

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
ATOMIC ACCESSORIES, INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
CENTRAL RESEARCH LABORATORIES, INC., Red Wing, Minn. ADV. PG. 9
Curtiss-Wright Corp., Industrial & Scientific Products Div., Fairfield Rd., Caldwell Township, N. Y.
Elm Laboratories, 10 Washington Ave., Hastings-on-Hudson, N. Y.
Farrel- Birmingham Co., Inc., Ansonia, Conn.
GENERAL MILLS, INC., MECHANICAL DIV., 1620 Central Ave., N. E., Minneapolis, Minn. ADV. PG. 34, 35
Greer Hydraulics, Inc., International Airport, Jamaica 30, N. Y.
Isotope Accessories Co., Box 9354, Philadelphia 39, Pa.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
M-H Standard Corp., 513–521 Communipaw Ave., Jersey City, 4, N. J.
MARVEL-SCHEBLER PRODUCTS DIV. OF BORG-WARNER CORP., Decatur, Ill. ADV. PG. 60D
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Nuclear Science Associates, 55 Manor Drive, Newark 6, N. J.
Pandjiris Weldment Co., 5151 Northrup Ave., St. Louis 10, Mo.
Townson & Mercer, Ltd., Croydon Surrey, England
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

MANOMETERS

See GAGES—Pressure

MASKS—Air

Acme Protection Equipment Co., 1299 Kalamazoo St., South Haven, Mich.
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.

MASKS—Dust, Fume, Gas, Smoke, etc.

Acme Protection Equipment Co., 1299 Kalamazoo St., South Haven, Mich.
De Vilbiss Co., 300 Phillips Ave., Toledo, Ohio
General Scientific Equipment Co., 7516 Limekiln Pike, Philadelphia 50, Pa.
Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.

MEGOHMMETERS

See also OHMMETERS

Associated Research, Inc., 3758 W. Belmont, Chicago, Ill.
Barnes Development Co., 213 W. Baltimore Pike, Lansdowne, Pa.
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Bruel & Kjaer, Naerum, Denmark
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Epco Electronics, Inc., 140 Liberty St., New York 6, N. Y.
Freed Transformer Co., Inc., 1726 Weirfield St., Brooklyn 27, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 18, Ohio
International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
KEITHLEY INSTRUMENTS, INC., DEPT. NB, 12415 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
MacLeod & Honeopal, Inc., 10 Roland St., Charlestown 29, Mass.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio
Nash & Thompson Ltd., Oakcroft Rd., Chessington, Surrey, England
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
PHYSICS RESEARCH LABORATORIES, P. O. Box 555, Hempstead, N. Y. ADV. PG. 199
Precision Apparatus Co., Inc., 70–31 84th St., Glendale 27, N. Y.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Winslow Co., Inc., 9 Liberty St., Newark 2, N. J.

METAL FABRICATORS—Ferrous

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Accurate Sheet Metal & Mfg. Works, 2336–38 Milwaukee Ave., Chicago 47, Ill.
Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Akron Metallic Gasket Co., The, 150 N. Union St., Akron, Ohio
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Al-Fin Div., Fairchild Engine & Airplane Corp., Conklin St., Farmingdale, N. Y.
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
All-Stainless Inc., 36 Rugg Road, Allston 34, Mass.
Amco Engineering Co., 7333 Ainslie St., Chicago 31, Ill.
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
Attalla Pipe & Foundry Co., Inc., P. O. Box 211, Attalla, Ala.
Avondale Marine Ways, Inc., P. O. Box 1030, New Orleans, La.
Bailey & Co., Inc., B. A., 61 Peck St., Providence, R. I.
BAR-RAY PRODUCTS, INC., 209 29th St., Brooklyn 32, N. Y. ADV. PG. 73
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Brown Morse Co., Muskegon, Mich.
BUD RADIO, INC., 2118 E. 55th St., Cleveland 3, Ohio. ADV. PG. 190
Canoga Corp., 5935 Sepulveda Blvd., Van Nuys, Calif.
Christianson Co., C. B., 164 Pennington St., Newark, N. J.
Combustion Engineering, Inc., 200 Madison Ave., New York 16, N. Y.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cooper Co., D. C., 1667 S. Michigan Ave., Chicago, Ill.
Curtiss-Wright Co., Metal Processing Div., 760 Northland Ave., Buffalo, N. Y.
Doyle & Roth Mfg. Co., Inc., 136–90 24th St., Brooklyn 32, N. Y.
Falstrom Company, 7 Falstrom Court, Passaic, N. J.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
Fulton Syphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Alloys Co., 405 W. First St., Boston 27, Mass.
General American Transportation Corp., 135 S. La Salle, Chicago, Ill.
General Metals, Inc., 358 Goldsboro St., P. O. Box 448, Greensboro, N. C.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Graflex, Inc., 154 Clarissa St., Rochester 6, N. Y.
GRAVER TANK & MFG. CO., INC., 4809 Tod Ave., East Chicago, Ind. ADV. PG. 127
Harper Co., H. M., 8200 Lehigh, Morton Grove, Ill.
Harty Co., Inc., R. V., 1433 Sieman Ave., Detroit 11, Mich.
Hudson Tool & Die Co., Inc., 28 Malvern St., Newark 5, N. J.
Hunt, Rodney Machine Co., 46 Mill St., Orange, Mass.
Hunter-Bristol Corp., Bristol, Pa.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Kinetics Corp., 2 Churchill Rd., Hingham, Mass.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Koven Fabricators, Inc., 90 E. Dickerson St., Dover, N. J.
LADISH CO., 5458 S. Packard Ave., Cudahy, Wis. ADV. PG. 8A–8E
L & B Welding Equipment, Inc., 2424 6th St., Berkeley, Calif.
L & S MACHINE CO., INC., P. O. Box 317, R. D. #2, Latrobe, Pa. ADV. PG. 57
Loader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
LENNARD CO., INC., P. M., 1 Hansen Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Makepeace Co., D. E., Attleboro, Mass.
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Nems-Clarke, Inc., 919 Jesup-Blair Drive, Silver Spring, Md.
Nuclear Engineering, Ltd., Greenwich Metal Works, London, S. E. 7, England
PACIFIC COAST ENGINEERING CO., Oak & Clement Sts., Alameda, Calif. ADV. PG. 116
Pandjiris Weldment Co., 5151 Northrup Ave., St. Louis 10, Mo.
PERFECTION MICA CO., MAGNETIC SHIELD DIV., 1322 N. Elston Ave., Chicago 22, Ill. ADV. PG. 199
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Pittsburgh Des Moines Steel Co., Pittsburgh 25, Pa.
Precision, Inc., 730 Lyndale Ave., N., Minneapolis, Minn.
Premier Metal Products Co., 337 Manida St., Bronx 59, N. Y.
PUROLATOR PRODUCTS, Inc., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Risdon Manufacturing Co., The, Naugatuck, Conn.
Robinson Machine Works, Inc., 802 E. 8th St., New Albany, Ind.
Scovill Mfg. Co., Mills Div., 99 Mill St., Waterbury 20, Conn.
Smith Corp., A. O., 3533 N. 27th St., Manowaukee 1, Wis.
Standard Pressed Steel Co., Box 1033, Jenkintown, Pa.
Standard Railway Equipment Mfg. Co., 310 S. Michigan Ave., Chicago 4, Ill.
Steel & Alloy Tank Co., 1 Bessemer St., Newark 1, N. J.
Stroed Products Corp., P. O. Box 447, Gadsden, Ala.
Struthers-Wells Corp., Warren, Pa.
Superior Tube Co., Box 191, Norristown, Pa.
Tickle Engineering Works., Inc., Arthur, 30 Delevan St., Brooklyn 31, N. Y.
U. M. & P. Mfg. Corp., 10929 Vanowen St., North Hollywood, Calif.
United Aircraft Products, Inc., 1116 Bolander, Dayton, Ohio
Universal Industrial Equipment Co., 1625 Paterson Plank Rd., Secaucus, N. J.
Vacuum Metals Corp., Div. of Crucible Steel Co. of America, P. O. Box 977, Syracuse 1, N. Y.
Warren Corp., The, 2901 Brighton Rd., Pittsburgh 12, Pa.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

METAL FABRICATORS—Nonferrous

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Accurate Sheet Metal & Mfg. Works, 2336–38 Milwaukee Ave., Chicago 47, Ill.
Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Advanced Products Co., 59 Broadway, North Haven, Conn.
Akron Metallic Gasket Co., The, 150 N. Union St., Akron, Ohio
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
Alpha Metals, Inc., 56 Water St., Jersey City 4, N. J.
Amco Engineering Co., 7333 Ainslie St., Chicago 31, Ill.
AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
American Brass Co., Waterbury 20, Conn.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
Associated Engineering Corp., 65 Kent St., Brookline 46, Mass.
Attalla Pipe & Foundry Co., Inc., P. O. Box 211, Attalla, Ala.

Avondale Marine Ways, Inc., P. O. Box 1030, New Orleans, La.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Ballou & Co., Inc., B. A., 61 Peck St., Providence, R. I.
Bean & Co., Morris, Yellow Springs, Ohio
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn 7, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., Conn.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, 820 65th Ave., Philadelphia 26, Pa.
Brooks & Perkins, Inc., 261 Constitution Ave., N. W., Washington 1, D. C.
Brush Beryllium Co., 4301 Perkins Ave., Cleveland 3, Ohio
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Christiansen Co., C. B., 164 Pennington St., Newark, N. J.
CONSOLIDATED REACTIVE METALS INC., 43 W. 46th St., New York 46, N. Y. ADV. PG. 185
Continental Copper & Steel Industries, Alloy Fabricaters Div., 500 Market St., Perth Amboy, N. J.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Curtiss-Wright Co., Metal Processing Div., 760 Northland Ave., Buffalo, N. Y.
Doyle & Roth Mfg. Co., Inc., 136-50 24th St., Brooklyn 32, N. Y.
Edlow Lead Co., 729 Bank St., Columbus 16, Ohio
Fansteel Metallurgical Corp., North Chicago, Ill.
Felstrom Company, 7 Felstrom Court, Passaic, N. J.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Alloys Co., 405 W. First St., Boston 27, Mass.
General American Transportation Corp., 135 S. LaSalle, Chicago, Ill.
General Metals, Inc., 358 Goldboro St., P. O. Box 448, Greensboro, N. C.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Graflex, Inc., 154 Clarissa St., Rochester 8, N. Y.
GRAVER TANK & MFG. CO., INC., 4809 Tod Ave., East Chicago, Ind. ADV. PG. 127
Harper Co., H. M., 8200 Lehigh, Morton Grove, Ill.
Hudson Tool & Die Co., Inc., 28 Malvern St., Newark 5, N. J.
Hunter-Bristol Corp., Bristol, Pa.
Indium Corp. of America, 1676 Lincoln Ave., Utica 4, N. Y.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Kinetics Corp., 2 Churchill Rd., Hingham, Mass.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Koven Fabricaters, Inc., 90 E. Dickerson St., Dover, N. J.
L & B Welding Equipment, Inc., 2424 6th St., Berkeley, Calif.
L & S MACHINE CO., INC., P. O. Box 317, R. D. #2, Latrobe, Pa. ADV. PG. 57
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
M-H Standard Corp., 513-521 Communipaw Ave., Jeersey City 4, N. J.
Makepeace Co., D. E., Attleboro, Mass.
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Methode Mfg. Corp., 2021 W. Churchill St., Chicago 47, Ill.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
National Lead Co., 111 Broadway, New York 6, N. Y.
Nams-Clarke, Inc., 919 Josup-Blair Drive, Silver Spring, Md.
Ney Co., J. M., Drawer 990, Hartford, Conn.
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
PACIFIC COAST ENGINEERING CO., Oak & Clement Sts., Alameda, Calif. ADV. PG. 116
Pandjiris Weldment Co., 5151 Northrup Ave., St. Louis 10, Mo.
Plaudler Co., 1002 West Ave., Rochester, N. Y.
Pittsburgh Des Moines Steel Co., Pittsburgh 25, Pa.
Precision, Inc., 730 Lyndale Ave., N., Minneapolis, Minn.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Reactive Metals, Inc., P. O. Box 370, Ashtabula, Ohio
Risdon Manufacturing Co., The, Naugatuck, Conn.
Robinson Machine Works, Inc., 802 E. 8th St., New Albany, Ind.
Scovill Mfg. Co., Mills Div., 99 Mill St., Waterbury 20, Conn.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
Standard Railway Equipment Mfg. Co., 310 S. Michigan Ave., Chicago 4, Ill.
Steel & Alloy Tank Co., 1 Bessemer St., Newark 1, N. J.
Stroed Products Corp., P. O. Box 447, Gadsden, Ala.
Struthers-Wells Corp., Warren, Pa.
Superior Tube Co., Box 191, Norristown, Pa.
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
U. M. & P. Mfg. Corp., 10929 Vanowen St., North Hollywood, Calif.
United Aircraft Products, Inc., 1116 Bolander, Dayton, Ohio
Universal Industrial Equipment Co., 1625 Paterson Plank Rd., Secaucus, N. J.
Vacuum Metals Corp., Div. of Crucible Steel Co. of America, P. O. Box 977, Syracuse 1, N. Y.
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

METALLURGICAL RESEARCH & DEVELOPMENT

See SERVICES

METALS AND ALLOYS

Alnico

Arnold Engineering Co., Marengo, Ill.
Barker Sales Co., 996-8 Edgewater Ave., Ridgefield, N. J.
Bram Chemical Co., Metallurgical Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
General Electric Co., Metallurgical Products Dept., 11139 E. Eight Mile Drive, Detroit 32, Mich.
Permag Corp., 214 Teaffe Place, Brooklyn 5, N. Y.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

Aluminum

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
City Chemical Corp. 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
Kawecki Chemical Co., Inc., 220 E. 42nd St., New York, N. Y.
Mackay, Inc., A. D., 198 Broadway, New York 38, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
National Lead Co., 111 Broadway, New York 6, N. Y.
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.
Ryerson & Son., Inc., Joseph T., P. O. Box 8000-A, Chicago, Ill.
Scovill Mfg. Co., Mills Div., 99 Mill St., Waterbury 20, Conn.
Vanadium Corp. of America, Graybar Bldg., 420 Lexington Ave., New York 17, N. Y.
VIENER & SONS, HYMAN, 5300 Hatcher St., Dept. NBG, Richmond 5, Va. ADV. PG. 205

Antimony

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Alpha Metals, Inc., 56 Water St., Jersey City 4, N. J.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Mackay, Inc., A. D., 198 Broadway, New York 38, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Mallinckrodt Chemical Works, Second & Mallinckrodt St., St. Louis 7, Mo.
National Lead Co., 111 Broadway, New York 6, N. Y.
Vor-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7

Arsenic

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Dextron Engineering, 1 Winslow St., Redwood City, Calif.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Mackay, Inc., A. D., 198 Broadway, New York 38, N. Y.

Barium

Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
King Laboratories, Inc., 127 Solar St., Syracuse 3, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Vor-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Beryllium and Beryllium Alloys

American Silver Co., 36-07 Prince St., Flushing, N. Y.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Beryllium Corp., P. O. Box 1462, Reading, Pa.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Brush Beryllium Co., 4301 Perkins Ave., Cleveland 3, Ohio
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Thermal Refractories Corp., 4501 Dell Ave., North Bergen, N. J.
Vor-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Bismuth and Bismuth Alloys

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Alpha Metals, Inc., 56 Water St., Jersey City 4, N. J.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anaconda Co., 25 Broadway, New York 4, N. Y.

Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Cambridge Smelting Co., 100 Pacific St., Cambridge 39, Mass.
Cerro de Pasco Corp., 300 Park Ave., New York 22, N. Y.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Mackay, Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Var-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Brass and Bronze

American Silver Co., 36-07 Prince St., Flushing, N. Y.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
MacKay Inc., A. D., 198 Broadway, New York 38, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
Revere Copper & Brass., Inc., 230 Park Ave., New York 17, N. Y.
Scovill Mfg. Co., Mills Div., 99 Mill St., Waterbury 20, Conn.
VIENER & SONS, HYMAN, 8300 Hatcher St., Dept. NBG, Richmond 5, Va. ADV. PG. 205

Cadmium

Alloys Unlimited, Inc., 44-55 Vernon Blvd., Long Island City 1, N. Y.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Cambridge Smelting Co., 100 Pacific St., Cambridge 39, Mass.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Eagle-Picher Co., Cincinnati, Ohio
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Hooper Chemical Corp., P. O. Box 313, Rutherford, N. J.
Mackay, Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Nuclear Corp. of America, Inc., 400 Park Lane, New York, N. Y.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Var-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Calcium

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Baker Chemical Co., J. T., Phillipsburg, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Electro Metallurgical Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Naico Metals, Inc., Canaan, Conn.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.

Curium

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
HEAVY MINERALS CO., 4000 N. Hawthorne St., Chattanooga, Tenn. ADV. PG. 146
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Metalle Chemical Corp., 117 Liberty St., New York 6, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
New Process Metals, 45-45 Manufacturers Place, Newark 5, N. J.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Var-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Chromium

Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Electro Metallurgical Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
General Alloys Co., 405 W. First St., Boston 27, Mass.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metal & Thermit Corp., Rahway, N. J.
SHIELDALLOY CORP., Newfield, N. J. ADV. PG. 143
Vanadium Corp. of America, Graybar Bldg., 420 Lexington Ave., New York 17, N. Y.
Var-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Cobalt

Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
INTERNATIONAL NICKEL CO., INC., 67 Wall St., New York 5, N. Y. ADV. PG. 76
Mackay, Inc., A. D., 198 Broadway, New York 38, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
Nuclear Consultants, Inc., 9842 Manchester Rd., St. Louis 19, Mo.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Var-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Copper

AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Chromium Corp. of America, Box 1229, Waterbury 20, Conn.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22, N. Y.
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.

Foil

See METALS—Foil

Gallium

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Eagle-Picher Co., Cincinnati, Ohio
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Var-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Germanium

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
Anaconda Co., 25 Broadway, New York 4, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
DeNawal International Rare Metals Co., 235 N. Front St., Philadelphia 3, Pa.
Eagle-Picher Co., Cincinnati, Ohio
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
Hughes Products, Los Angeles 45, Calif.
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Mackay, Inc., A. D., 198 Broadway, New York 38, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.

St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Sylvania Electric Products, Inc., Tungsten & Chemical Div., Towanda, Pa.
Vor-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Gold and Gold Alloys

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Baker Chemical Co., J. T., Phillipsburg, N. J.
Baker & Co., Inc., 113 Astor St, Newark 5, N. J.
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
CONSOLIDATED REACTIVE METALS INC., 43 W. 46th St., New York 46, N. Y. ADV. PG. 185
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
Handy & Harman, 82 Fulton St., New York 38, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Ney Co., J. M., Drawer 990, Hartford, Conn.
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22, N. Y.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Vor-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.

Hafnium

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
DeNewal International Rare Metals Co., 235 N. Front St., Philadelphia 6, Pa.
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 4, Pa.
Johnston & Funk Titanium Corp., W. Kemrow Ave., Wooster, Ohio
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
Reactive Metals, Inc., P. O. Box 370, Ashtabula, Ohio
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Timax Corp., 153 E. 26th St., New York 10, N. Y.
U. S. INDUSTRIAL CHEMICALS CO., DIV. OF NATIONAL DISTILLERS & CHEMICAL CORP., 99 Park Ave., New York 16, N. Y. ADV. PG. 62
Vor-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7

Indium and Indium Alloys

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Alpha Metals, Inc., 56 Water St., Jersey City 4, N. J.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Cerro de Pasco Corp., 300 Park Ave., New York 22, N. Y.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Indium Corp. of America, 1676 Lincoln Ave., Utica 4, N. Y.
Jones Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Vor-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.

Iridium

AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark, N. J.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Chemical Commerce, 166 Clifford St., Newark, N. J.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
CONSOLIDATED REACTIVE METALS INC., 43 W. 46th St., New York 46, N. Y. ADV. PG. 185
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Fielschman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Vor-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.

Iron

American Silver Co., 36-07 Prince St., Flushing, N. Y.
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
Antara Chemicals Div. of General Aniline & Film Corp., 435 Hudson St., New York 14, N. Y.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Crucible Steel Co. of America, Henry W. Oliver Bldg. P. O. Box 88, Pittsburgh 30, Pa.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Republic Steel Corp., 3100 E. 45th St., Cleveland 27, Ohio
U. S. PIPE & FOUNDRY CO., Burlington, N. J. ADV. PG. 12, 13
VIENER & SONS, HYMAN, 5300 Hatcher St., Dept. NBG, Richmond 5, Va. ADV. PG. 205

Lead and Lead Alloys

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Alpha Metals, Inc., 56 Water St., Jersey City 4, N. J.
AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
BAR-RAY PRODUCTS, INC., 309 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Cambridge Smelting Co., 100 Pacific St., Cambridge 39, Mass.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Edlow Lead Co., 729 Bank St., Columbus 16, Ohio
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Glaser Lead Co., Inc., 31 Wyckoff Ave., Brooklyn 27, N. Y.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
Vor-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
VIENER & SONS, HYMAN, 5300 Hatcher St., Dept. NBG, Richmond 5, Va. ADV. PG. 205

Lithium

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
American Potash & Chemical Corp., 3030 W. 6th St., Los Angeles 54, Calif.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
Lithium Corp. of America, Inc., 2500 Rand Tower, Minneapolis 2, Minn.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Maywood Chemical Works, 111 W. Hunter Ave., Maywood, N. J.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Timax Corp., 153 E. 26th St., New York 10, N. Y.

Magnesium

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Brooks & Perkins, Inc., 361 Constitution Ave., N. W., Washington 1, D. C.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Dow Chemical Co., Midland, Mich.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Naico Metals, Inc., Canaan, Conn.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Vor-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Manganese

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Bright Star Industries, 600 Getty Ave., Clifton, N. J.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
CONSOLIDATED REACTIVE METALS INC., 43 W. 46th St., New York 46, N. Y. ADV. PG. 185
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Electro Metallurgical Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Vanadium Corp. of America, Graybar Bldg., 420 Lexington Ave., New York 17, N. Y.
Vor-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Mercury

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bork & Co., Inc., F. W., Park Place East, Wood Ridge, N. J.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Hill Co., C. E., 35 W. Grand River, Detroit 26, Mich.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Minimax Co., 5905 N. Clark St., Chicago 26, Ill.
VISNER & SONS, HYMAN, 5300 Hatcher St., Dept. NBG, Richmond 5, Va. ADV. PG. 205
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.

Molybdenum

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Associated Engineering & Mfg. Corp., Glen Ridge, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Cross Co., H., 15 Beekman St., New York 38, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fansteel Metallurgical Corp., North Chicago, Ill.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
General Electric Co., Lamp Wire & Phosphors Dept., 1331 Chardon Rd., Cleveland 17, Ohio
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallory-Schwarzkopf Metals Inc., 320 Yonkers Ave., Yonkers, N. Y.
SHIELDALLOY CORP., Newfield, N. J. ADV. PG. 143
Sylvania Electric Products, Inc., Tungsten & Chemical Div., Towanda, Pa.
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7

Nickel and Nickel Alloys

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Chromium Corp. of America, Box 1229, Waterbury 20, Conn.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
CONSOLIDATED REACTIVE METALS INC., 43 W. 46th St., New York 46, N. Y. ADV. PG. 185
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Driver-Harris Co., 201 Middlesex St., Harrison, N. J.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
General Alloys Co., 405 W. First St., Boston 27, Mass.
Haynes Stellite Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York, N. Y.
INTERNATIONAL NICKEL CO., INC., 67 Wall St., New York 5, N. Y. ADV. PG. 76
Jolliff Mfg. Corp., C. O., 200 Paquet Ave., Southport, Conn.
Johnston & Funk Titanium Corp., W. Kemrow Ave., Wooster, Ohio
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
PERFECTION MICA CO., MAGNETIC SHIELD DIV., 1322 N. Elston Ave., Chicago 22, Ill. ADV. PG. 199
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
SUPERIOR STEEL CORP., Carnegie, Pa. ADV. PG. 51
Vacuum Metals Corp., Div. of Crucible Steel Co. of America, P. O. Box 977, Syracuse 1, N. Y.
Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

Nickel Ribbon

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
COHN CORP., SIGMUND, 121 S. Columbus Ave., Mt. Vernon, N. Y. ADV. PG. 200
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Driver-Harris Co., 201 Middlesex St., Harrison, N. J.
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
Jolliff Mfg. Corp., C. O., 200 Paquet Ave., Southport, Conn.
Johnston & Funk Titanium Corp., W. Kemrow Ave., Wooster, Ohio
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.

Niobium (Columbium)

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
CONSOLIDATED REACTIVE METALS INC., 43 W. 46th St., New York 46, N. Y. ADV. PG. 185
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Electro Metallurgical Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Fansteel Metallurgical Corp., North Chicago, Ill.
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
Hooper Chemical Corp., P. O. Box 313, Rutherford, N. J.
Jones Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Johnston & Funk Titanium Corp., W. Kemrow Ave., Wooster, Ohio
Kawecki Chemical Co., Inc., 220 E. 42nd St., New York, N. Y.
Kennametal, Inc., Latrobe, Pa.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
SHIELDALLOY CORP., Newfield, N. J. ADV. PG. 143
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Vanadium Corp. of America, Graybar Bldg., 420 Lexington Ave., New York 17, N. Y.
Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7

Palladium

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark, N. J.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Handy & Harman, 82 Fulton St., New York 38, N. Y.
INTERNATIONAL NICKEL CO., INC., 67 Wall St., New York 5, N. Y. ADV. PG. 76
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Noy Co., J. M., Drawer 990, Hartford, Conn.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22, N. Y.
Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.

Phosphor Bronze

Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Beryllium Corp., P. O. Box 1462, Reading, Pa.
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Scovill Mfg. Co., Mills Div., 99 Mill St., Waterbury 20, Conn.

Platinum

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark 5, N. J.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
COHN CORP., SIGMUND, 121 S. Columbus Ave., Mt. Vernon, N. Y. ADV. PG. 200
CONSOLIDATED REACTIVE METALS, INC., 43 W. 46th St., New York 46, N. Y. ADV. PG. 185
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Handy & Harman, 82 Fulton St., New York 38, N. Y.
INTERNATIONAL NICKEL CO., INC., 67 Wall St., New York 5, N. Y. ADV. PG. 76
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Noy Co., J. M., Drawer 990, Hartford, Conn.
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22, N. Y.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Uranium Ore & Supply Co., 546 W. Lake St., Chicago 6, Ill.
Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.

Plutonium

ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.

Polonium

ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
U. S. **RADIUM CORP.**, Morristown, N. J. ADV. PG. 163

Potassium & Alloys

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
MSH Research Corp., Callery, Pa.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Radium

ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
U. S. **RADIUM CORP.**, Morristown, N. J. ADV. PG. 163

Rhenium

Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Selenium

AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Fine Chemical Co., Inc., 250 W. 57th St., New York 19, N. Y.
Kawecki Chemical Co., Inc., 220 E. 42nd St., New York, N. Y.
Kennecott Copper Co., 161 E. 42nd St., New York, N. Y.
Phelps Dodge Refining Co., 300 Park Ave., New York 22, N. Y.

Silicon

Dow Corning Corp., Midland, Mich.
DU PONT DE NEMOURS & CO., INC., E. I., Wilmington 98, Del. ADV. PG. 10
Electro Metallurgical Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Texas Instruments Incorporated, 6000 Lemmon Ave., Dallas 9, Texas

Silicon—High Purity

DU PONT DE NEMOURS & CO., INC., E. I., Wilmington 98, Del. ADV. PG. 10
Engle-Picher Co., Cincinnati, Ohio
Fine Chemical Co., Inc., 250 W. 57th St., New York 19, N. Y.
Texas Instruments Incorporated, 6000 Lemmon Ave., Dallas 9, Texas

Silver

Alloys Unlimited Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark 5, N. J.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Amos Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
CONSOLIDATED REACTIVE METALS, INC., 43 W. 46th St., New York 46, N. Y. ADV. PG. 185
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Handy & Harman, 82 Fulton St., New York 38, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Noy Co., J. M., Drawer 990, Hartford, Conn.
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22, N. Y.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.

Silver Alloys and Compounds

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark 5, N. J.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Amos Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anchor Metal Co., 966 Meeker St., Brooklyn 22, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
CONSOLIDATED REACTIVE METALS, INC., 43 W. 46th St., New York 46, N. Y. ADV. PG. 185
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Drakenfeld & Co., B. F., Box 519, Washington, Pa.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Handy & Harman, 82 Fulton St., New York 38, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Noy Co., J. M., Drawer 990, Hartford, Conn.
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.

Sodium and Sodium Alloys

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
DU PONT DE NEMOURS & CO., INC., E. I., Wilmington 98, Del. ADV. PG. 10
MSH Research Corp., Callery, Pa.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
U. S. **INDUSTRIAL CHEMICALS CO., DIV. OF NATIONAL DISTILLERS & CHEMICAL CORP.**, 99 Park Ave., New York 16, N. Y. ADV. PG. 62

Steel

Allegheny Ludlum Steel Corp., Oliver Bldg., Room 2020, Pittsburgh 22, Pa.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Carpenter Steel Co., The, 107 W. Bern St., Reading, Pa.
Crucible Steel Co. of America, Henry W. Oliver Bldg. P. O. Box 88, Pittsburgh 30, Pa.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
Johnston & Funk Titanium Corp., W. Kemrow Ave., Wooster, Ohio
Newport Steel Co., 9th & Lowell Sts., Newport, Ky.
PERFECTION MICA CO., MAGNETIC SHIELD DIV., 1322 N. Elston Ave., Chicago 22, Ill. ADV. PG. 199
Republic Steel Corp., 3100 E. 45th St., Cleveland 27, Ohio
Ryerson & Son, Inc., Joseph T., P. O. Box 8000-A, Chicago, Ill.
SUPERIOR STEEL CORP., Carnegie, Pa. ADV. PG. 51
U. S. **PIPE & FOUNDRY CO.**, Burlington, N. J. ADV. PG. 12, 13
United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.
Vacuum Metals Corp., Div. of Crucible Steel Co. of America, P. O. Box 977, Syracuse 1, N. Y.
VIENER & SONS, HYMAN, 5300 Hatcher St., Dept. N8G, Richmond 5, Va. ADV. PG. 205

Steel, Stainless

Allegheny Ludlum Steel Corp., Oliver Bldg., Room 2020, Pittsburgh 22, Pa.
All-Stainless Inc., 36 Rugg Road, Allston 34, Mass.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
CARLSON, INC., G. O., Thorndale, Pa. ADV. PG. 14
Carpenter Steel Co., The, 107 W. Bern St., Reading, Pa.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Chromalloy Corp., 450 Tarrytown Rd., White Plains, N. Y.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Driver-Harris Co., 201 Middlesex St., Harrison, N. J.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
General Alloys Co., 405 W. First St., Boston 27, Mass.
Johnston & Funk Titanium Corp., W. Kemrow Ave., Wooster, Ohio
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Republic Steel Corp., 3100 E. 45th St., Cleveland 27, Ohio
Ryerson & Son, Inc., Joseph T., P. O. Box 8000-A, Chicago, Ill.
SUPERIOR STEEL CORP., Carnegie, Pa. ADV. PG. 51
U. S. **PIPE & FOUNDRY CO.**, Burlington, N. J. ADV. PG. 12, 13
United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.
Vacuum Metals Corp., Div. of Crucible Steel Co. of America, P. O. Box 977, Syracuse 1, N. Y.
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.
Washington Steel Corp., 60 S. Woodland Ave., Washington, Pa.

Strontium

Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
King Laboratories, Inc., 127 Solar St., Syracuse 3, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.

Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Tantalum

Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
American Silver Co., 36–07 Prince St., Flushing, N. Y.
Associated Engineering & Mfg. Co., Glen Ridge, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Fansteel Metallurgical Corp., North Chicago, Ill.
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
Hooper Chemical Corp., P. O. Box 313, Rutherford, N. J.
Johnston & Funk Titanium Corp., W. Komrow Ave., Wooster, Ohio
Kawecki Chemical Co., Inc., 220 E. 42nd St., New York, N. Y.
Kennametal, Inc., Latrobe, Pa.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
SHIELDALLOY CORP., Newfield, N. J. ADV. PG. 143
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7

Thermostatic Bi-Metals

See BI-METALS—Thermostatic

Thorium

Associated Engineering & Mfg. Corp., Glen Ridge, N. J.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
DAVISON CHEMICAL CO., Box 485, Pompton Plains, N. J. ADV. PG. 172
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
HEAVY MINERALS CO., 4000 N. Hawthorne St., Chattanooga, Tenn. ADV. PG. 146
Johnston & Funk Titanium Corp., W. Komrow Ave., Wooster, Ohio
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
LINDSAY CHEMICAL CO., 272 Ann St., West Chicago, Ill. ADV. PG. 40
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metal Hydrides, Inc., 12–24 Congress St., Beverly, Mass.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
New Process Metals, 45–65 Manufacturers Place, Newark 5, N. J.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
Reactor Materials Dept., Davison Chemical Co., P. O. Box 218, Erwin, Tenn.
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7

Tin

Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
Alpha Metals, Inc., 56 Water St., Jersey City 4, N. J.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anchor Metal Co., 966 Mosher St., Brooklyn 22, N. Y.
Baker Chemical Co., J. T., Phillipsburg, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Cambridge Smelting Co., 100 Pacific St., Cambridge 39, Mass.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Fleischmen, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Glaser Lead Co., Inc., 31 Wyckoff Ave., Brooklyn 27, N. Y.
Hooper Chemical Corp., P. O. Box 313, Rutherford, N. J.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
National Lead Co., 111 Broadway, New York 6, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
VIENER & SONS, HYMAN, 5300 Hatcher St., Dept. NBG, Richmond 5, Va. ADV. PG. 205
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7

Titanium

Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
American Silver Co., 36–07 Prince St., Flushing, N. Y.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Associated Engineering & Mfg. Co., Glen Ridge, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Driver-Harris Co., 201 Middlesex St., Harrison, N. J.
DU PONT DE NEMOURS & CO., INC., E. I., Wilmington 98, Del. ADV. PG. 10
Electro Metallurgical Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
Johnston & Funk Titanium Corp., W. Komrow Ave., Wooster, Ohio
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Mallory-Sharon Titanium Corp., Niles, Ohio
Metal Hydrides, Inc., 12–24 Congress St., Beverly, Mass.
Metal & Thermit Corp., Rahway, N. J.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
National Lead Co., 111 Broadway, New York 6, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Rem-Cru Titanium, Inc., Midland, Pa.
Republic Steel Corp., 3100 E. 45th St., Cleveland 27, Ohio
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Titanium Metals Corp. of America, 233 Broadway, New York 7, N. Y.
U. S. INDUSTRIAL CHEMICALS CO., DIV. OF NATIONAL DISTILLERS & CHEMICAL CORP., 99 Park Ave., New York 16, N. Y. ADV. PG. 62
Vanadium Corp. of America, Graybar Bldg., 420 Lexington Ave., New York 17, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.

Tungsten

Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
Associated Engineering & Mfg. Corp., Glen Ridge, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Cross Co., H., 15 Beekman St., New York 38, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Electro Metallurgical Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Fansteel Metallurgical Corp., North Chicago, Ill.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
General Electric Co., Lamp Wire & Phosphors Dept., 1331 Chardon Rd., Cleveland 17, Ohio
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallory-Schwarzkopf Metals Inc., 320 Yonkers Ave., Yonkers, N. Y.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
SHIELDALLOY CORP., Newfield, N. J. ADV. PG. 143
Sylvania Electric Products, Inc., Tungsten & Chemical Div., Towanda, Pa.
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7

Tungsten Ribbon

Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
Associated Engineering & Mfg. Corp., Glen Ridge, N. J.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Cross Co., H., 15 Beekman St., New York 38, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
General Electric Co., Lamp Wire & Phosphors Dept., 1331 Chardon Rd., Cleveland 17, Ohio
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallory-Schwarzkopf Metals Inc., 320 Yonkers Ave., Yonkers, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.

Uranium

See also FUEL ELEMENTS—Nuclear

Anaconda Co., 25 Broadway, New York 4, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
Reactor Materials Dept., Davison Chemical Co., P. O. Box 218, Erwin, Tenn.
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Uranium Ore & Supply Co., 546 W. Lake St., Chicago 6, Ill.

Uranium—Enriched

Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
Reactor Materials Dept., Davison Chemical Co., P. O. Box 218, Erwin, Tenn.
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46

Vanadium

Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Electro Metallurgical Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Mackay Inc., A. D. 198 Broadway, New York 38, N. Y.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
SHIELDALLOY CORP., Newfield, N. J. ADV. PG. 143

Timax Corp., 153 E. 26th St., New York 10, N. Y.
Vanadium Corp. of America, Graybar Bldg., 420 Lexington Ave., New York 17, N. Y.
Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.

Zinc

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Anchor Metal Co., 966 Meeker St., Brooklyn 22, N. Y.
Baker Chemical Co., J. T., Phillipsburg, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Eagle-Picher Co., Cincinnati, Ohio
FEDERATED METALS DIV., AMERICAN SMELTING & REFINING CO., 120 Broadway, New York 5, N. Y. ADV. PG. 122
Glaser Lead Co., Inc., 31 Wyckoff Ave., Brooklyn 27, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
National Lead Co., 111 Broadway, New York 6, N. Y.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.
VIENER & SONS, HYMAN, 5300 Hatcher St., Dept. NBG, Richmond 3, Va. ADV. PG. 205

Zirconium

Allegheny Ludlum Steel Corp., Oliver Bldg., Room 2020, Pittsburgh 22, Pa.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
CARBORUNDUM METALS CO., P. O. Box 132, Akron, N. Y. ADV. PG. 30, 31
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
COLUMBIA-NATIONAL CORP., 70 Memorial Drive, Cambridge 42, Mass. ADV. PG. 33
CONSOLIDATED REACTIVE METALS, INC., 43 W. 46th St., New York 46, N. Y. ADV. PG. 185
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
DeRewal International Rare Metals Co., 235 N. Front St., Philadelphia 6, Pa.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
Johnston & Funk Titanium Corp., W. Kemrow Ave., Wooster, Ohio
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metal Hydrides, Inc., 12-24 Congress St., Beverly, Mass.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
Reactive Metals, Inc., P. O. Box 370, Ashtabula, Ohio
SUPERIOR STEEL CORP., Carnegie, Pa. ADV. PG. 51
Timax Corp., 153 E. 26th St., New York 10, N. Y.
U. S. INDUSTRIAL CHEMICALS CO., DIV. OF NATIONAL DISTILLERS & CHEMICAL CORP., 99 Park Ave., New York 16, N. Y. ADV. PG. 62
Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.

METALS—Clad

Allegheny Ludlum Steel Corp., Oliver Bldg., Room 2020, Pittsburgh 22, Pa.
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
Chromalloy Corp., 450 Tarrytown Rd., White Plains, N. Y.
CLEVELAND HARD FACING, 3047 Stillson Ave., Cleveland 5, Ohio. ADV. PG. 202
Continental-Diamond Fibre Corp., Newark, Del.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Driver-Harris Co., 201 Middlesex St., Harrison, N. J.
General Alloys Co., 405 W. First St., Boston 27, Mass.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
National Lead Co., 111 Broadway, New York 6, N. Y.
NUCLEAR METALS, INC., 224 Albany St., Cambridge 39, Mass. ADV. PG. 154
PERFECTION MICA CO., MAGNETIC SHIELD DIV., 1322 N. Elston Ave., Chicago 22, Ill. ADV. PG. 199
Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.
SUPERIOR STEEL CORP., Carnegie, Pa. ADV. PG. 51
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
Treadwell Co., Midland, Pa.
U. S. PIPE & FOUNDRY CO., Burlington, N. J. ADV. PG. 12, 13

METALS—Coefficient

American Silver Co., 36-07 Prince St., Flushing, N. Y.
Driver-Harris Co., 201 Middlesex St., Harrison, N. J.
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.

METALS—Foil

Aerojet-General Nucleonics, San Ramon, Calif.
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Alpha Metals, Inc., 56 Water St., Jersey City 4, N. J.
Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
American Brass Co., Waterbury 20, Conn.
American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark, N. J.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Canadian Radium & Uranium Corp., 530 Fifth Ave., New York 20, N. Y.
Chromium Corp. of America, Box 1229, Waterbury 20, Conn.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Driver-Harris Co., 201 Middlesex St., Harrison, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Indium Corp. of America, 1676 Lincoln Ave., Utica 4, N. Y.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Kamen Aircraft Corp., Nuclear Div., 2013 Ridgecrest Drive, S. E., Albuquerque, N. M.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
PERFECTION MICA CO., MAGNETIC SHIELD DIV., 1322 N. Elston Ave., Chicago 22, Ill. ADV. PG. 199
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
Reactive Metals, Inc., P. O. Box 370, Ashtabula, Ohio
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

METALS—High Density Alloy

Allegheny Ludlum Steel Corp., Oliver Bldg., Room 2020, Pittsburgh 22, Pa.
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Fansteel Metallurgical Corp., North Chicago, Ill.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
General Electric Co., Metallurgical Products Dept., 11139 E. Eight Mile Blvd., Detroit 32, Mich.
Glaser Lead Co., Inc., 31 Wyckoff Ave., Brooklyn 27, N. Y.
Kennametal, Inc., Latrobe, Pa.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Ney Co., J. M., Drawer 990, Hartford, Conn.
Reactor Materials Dept., Davison Chemical Co., P. O. Box 218, Erwin, Tenn.
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Sintercast Corp. of America, 134 Woodworth Ave., Yonkers, N. Y.
Vacuum Metals Corp., Div. of Crucible Steel Co. of America, P. O. Box 977, Syracuse 1, N. Y.
Victor Chemical Works, 155 N. Wacker Drive, Chicago, Ill.

METALS—High Permeability

Allegheny Ludlum Steel Corp., Oliver Bldg., Room 2020, Pittsburgh 22, Pa.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Arnold Engineering Co., Marengo, Ill.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Carpenter Steel Co., The, 107 W. Bern St., Reading, Pa.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
General Electric Co., Metallurgical Products Dept., 11139 E. Eight Mile Blvd., Detroit 32, Mich.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
PERFECTION MICA CO., MAGNETIC SHIELD DIV., 1322 N. Elston Ave., Chicago 22, Ill. ADV. PG. 199
Vacuum Metals Corp., Div. of Crucible Steel Co. of America, P. O. Box 977, Syracuse 1, N. Y.
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

METALS—Hydride

Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Lithium Corp. of America, Inc., 2500 Rand Tower, Minneapolis 2, Minn.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metal Hydrides, Inc., 12-24 Congress St., Beverly, Mass.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.

METALS—Laminated

Allegheny Ludlum Steel Corp., Oliver Bldg., Room 2020, Pittsburgh 22, Pa.
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Indium Corp. of America, 1676 Lincoln Ave., Utica 4, N. Y.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Ney Co., J. M., Drawer 990, Hartford, Conn.
PERFECTION MICA CO., MAGNETIC SHIELD DIV., 1322 N. Elston Ave., Chicago 22, Ill. ADV. PG. 199
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

METALS—Powdered

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark, N. J.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Antara Chemicals Div. of General Aniline & Film Corp., 435 Hudson St., New York 14, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Borolite Corp., 320 Yonkers Ave., Yonkers, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Electro Metallurgical Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
General Electric Co., Metallurgical Products Dept., 11139 E. Eight Mile Blvd., Detroit 32, Mich.
Hammel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
Indium Corp. of America, 1676 Lincoln Ave., Utica 4, N. Y.
Kennametal, Inc. Latrobe, Pa.
Keystone Carbon Co., Inc., Saint Marys, Pa.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Metallizing Engineering Co., 1101 Prospect Ave., Westbury, N. Y.
Metal Hydrides, Inc., 12-24 Congress St., Beverly, Mass.
METALS DISINTEGRATING CO., INC., P. O. Box 290, Elizabeth, N. J. ADV. PG. 205
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
National Lead Co., 111 Broadway, New York 6, N. Y.
Reactor Materials Dept., Davison Chemical Co., P. O. Box 218, Erwin, Tenn.
Republic Steel Corp., 3100 E. 45th St., Cleveland 27, Ohio
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Sintercast Corp. of America, 134 Woodworth Ave., Yonkers, N. Y.
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
U. S. Graphite Co., Div. of The Wickes Corp., Holland Ave., Saginaw, Mich.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
WAH CHANG CORP., 233 Broadway, New York 7, N. Y. ADV. PG. 6, 7
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.

METALS—Steel, Boron Stainless

Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Carpenter Steel Co., 107 W. Bern St., Reading, Pa.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
General Alloys Co., 405 W. First St., Boston 27, Mass.
Sintercast Corp. of America, 134 Woodworth Ave., Yonkers, N. Y.
SUPERIOR STEEL CORP., Carnegie, Pa. ADV. PG. 51
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.
Vacuum Metals Corp., Div. of Crucible Steel Co. of America, P. O. Box 977, Syracuse 1, N. Y.

METALS—Vacuum Melted

Allegheny Ludlum Steel Corp., Oliver Bldg., Room 2020, Pittsburgh 22, Pa.
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Associated Engineering & Mfg. Co., Glen Ridge, N. J.
Austenal, Inc., P. O. Box 625, Dover, N. J.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
CARBORUNDUM METALS CO., P. O. Box 32, Akron, N. Y. ADV. PG. 30, 31
Carpenter Steel Co., The, 107 W. Bern St., Reading, Pa.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Driver-Harris Co., 201 Middlesex St., Harrison, N. J.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
General Electric Co., Metallurgical Products Dept., 11139 E. Eight Mile Drive, Detroit 32, Mich.
Handy & Harman, 82 Fulton St., New York 38, N. Y.
Haynes Stellite Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York, N. Y.
Indium Corp. of America, 1676 Lincoln Ave., Utica 4, N. Y.
Kinetics Corp., 2 Churchill Rd., Hingham, Mass.
King Laboratories, Inc., 127 Solar St., Syracuse 3, N. Y.
Lithium Corp. of America, Inc., 2500 Rand Tower, Minneapolis 2, Minn.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallory-Sharon Titanium Corp., Niles, Ohio
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
National Research Corp., 70 Memorial Drive, Cambridge 42, Mass.
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
Reactor Materials Dept., Davison Chemical Co., P. O. Box 218, Erwin, Tenn.
Reactive Metals, Inc., P. O. Box 370, Ashtabula, Ohio
Rem-Cru Titanium, Inc., Midland, Pa.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
Vacuum Metals Corp., Div. of Crucible Steel Co. of America, P. O. Box 977, Syracuse 1, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

METERS

See also AMMETERS
CONTROLS
GAGES
INDICATORS
VOLTMETERS

METERS—BTU

Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.

METERS—Count-Rate

Aerojet-General Nucleonics, San Ramon, Calif.
Airpax Products Co., Middle River, Baltimore 20, Md.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EXCO ELECTRONICS, LTD., 34-01 30th St., Long Island City 6, N. Y. ADV. PG. 181
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Assembly Products, Inc., Chesterland 6, Ohio
B-I-F Industries, Inc., 530-D Harris Ave., Providence 1, R. I.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Bruel & Kjaer, Naerum, Denmark
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
Electric Tachometer Corp., 68th & Upland Sts., Philadelphia 42, Pa.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
J B T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
LEIGHTON LABS., H. W., York Rd. & Sunset Lane, Hatboro, Pa. ADV. PG. 182
Measurement Engineering Ltd., Ampriar, Ontario, Canada
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
Revere Corp. of America, Wallingford, Conn.
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 195
Technical Measurement Corp., 140-142 State St., New Haven, Conn.
TULLAMORE ELECTRONICS LABS., 6035 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Westinghouse Electric Corp., X-Ray Div., 2519 Wilkens Ave., Baltimore 3, Md.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.

METERS—Electric

See AMMETERS; VOLTMETERS etc.

METERS—Flow

Acoustica Associates, Inc., 26 Windsor Rd., Mineola, N. Y.
Aero Research Instrument Co., 315 N. Aberdeen St., Chicago 7, Ill.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
All-Stainless Inc., 36 Rugg Road, Allston 34, Mass.
American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
Autocall Co., Shelby, Ohio
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
B-I-F Industries, Inc., 530-D Harris Ave., Providence 1, R. I.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.

Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brooks Rotameter Co., Box 432, Lansdale, Pa.
Custom Lubricant Co., 743 Dwight Way, Berkeley 10, Calif.
Elliott Brothers (London) Century Works, Lewisham, London, S. E. 13, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Gems Co., P. O. Box 222, Newinton, Conn.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gulton Industries, Durham Ave., Metuchen, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hastings-Raydist, Inc., Newcomb Ave., Hampton, Va.
HAYS CORP., Michigan City 39, Ind. ADV. PG. 183
Industrial Development Labs., Inc., 17 Pollock Ave., Jersey City 5, N. J.
Jorgusen Gage & Valve Co., Adams St., Burlington, Mass.
Jordan Corp., Div. of OPW Corp., 6013 Wiehe Rd., Cincinnati 13, Ohio
Kontes Glass Co., Dept. P-159, Vineland, N. J.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Librascope, Inc., 808 Western Ave., Glendale, Calif.
MSH Research Corp., Callery, Pa.
MAGNETROL INC., 2110 S. Marshall St., Chicago 23, Ill. ADV. PG. 191
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Nahatan St., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
National Instrument Labs., Inc., 6108 Rhode Island Ave., Riverdale, Md.
Nuclear Aids Corp., 612 N. Michigan Ave., Chicago, Ill.
Nuclear Research Corp., Southampton, Pa.
Nucor Research, Inc., 2421 Wolcott, Ferndale, Mich.
Potter Aeronautical Corp., Route 22, Union, N. J.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Republic Flow Meters Co., 2240 Diversey Pkwy., Chicago 47, Ill.
Revere Corp. of America, Wallingford, Conn.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Squires Co., C. E. 18805 Syracuse Ave., Cleveland 10, Ohio
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Trimount Instrument Co., 3119 W. Lake St., Chicago 12, Ill.
Victory Engineering Corp., 77 Springfield Rd., Union, N. J.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Warner Electronic Devices, Rankin, Ill.
Worthington Corp., Harrison, N. J.

METERS—Gas, Precision Metering

Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brooks Rotameter Co., Box 432, Lansdale, Pa.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hastings-Raydist, Inc., Newcomb Ave., Hampton, Va.
HAYS CORP., Michigan City 39, Ind. ADV. PG. 183
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.
Labline, Inc., 3070–82 W. Grand Ave., Chicago 22, Ill.
Potter Aeronautical Corp., Route 22, Union, N. J.
Schutte & Koerting Co., Cornwell Heights, Bucks County, Pa.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.

METERS—Gauss

Cambridge Instrument Co., Inc., 3529 Grand Central Terminal, New York 17, N. Y.
Control Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
DYNA-EMPIRE, INC., 1075 Stewart Ave., Garden City, N. Y. ADV. PG. 197
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
MAGNAFLUX CORP., 7346 W. Lawrence Ave., Chicago 31, Ill. ADV. PG. 118
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Radio Frequency Labs., Inc., Boonton 2, N. J.
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Shurite Meters, 35 Hamilton St., New Haven 8, Conn.

METERS—Period

AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34–01 30th St., Long Island City 6, N. Y. ADV. PG. 181
Assembly Products, Inc., Chesterland 6, Ohio
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Cramer Controls Corp., Box 83, Centerbrook, Conn.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12115 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Westinghouse Electric Corp., X-Ray Div., 2519 Wilkens Ave., Baltimore 3, Md.

METERS—pH

Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
Analytical Measurements, Inc., 585 Main St., Chatham, N. J.
Assembly Products, Inc., Chesterland 6, Ohio
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Instrument Co., Inc., 3529 Grand Central Terminal, New York 17, N. Y.
Coleman Instruments, Inc., 318 Madison St., Maywood, Ill.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Macbeth Instrument Corp., Little Britain Rd., Newburgh, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photovolt Corp., 95 Madison Ave., New York 16, N. Y.
Q.V.S., Inc., 20 N. 15th St., Orange, N. J.
Scientific Instruments Div. of Beckman Instruments, Inc., Fullerton, Calif.
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

METERS—Recording

See RECORDERS

METERS—Survey

See COUNTERS and DOSIMETERS—G-M

METERS—Water Turbidity

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Worthington Corp., Harrison, N. J.

MICA

Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
Asheville-Schoonmaker Co., Inc., 900 Jefferson Ave., Newport News, Va.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Brush Beryllium Co., 4301 Perkins Ave., Cleveland 3, Ohio
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Continental-Diamond Fibre Corp., Newark, Delaware
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
Mica Insulator Co., 797 Broadway, Schenectady 1, N. Y.
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.
PERFECTION MICA CO., MAGNETIC SHIELD DIV., 1322 N. Elston Ave., Chicago 22, Ill. ADV. PG. 199
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29

MICROAMMETERS

See AMMETERS—Milli & Micro

MICROCHEMICAL EQUIPMENT

Amersil Co., Inc., 683 Ramsey Ave., Hillside, N. J.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
Hamilton Co., 1134 Whitley Co., Whittier, Calif.
Kontes Glass Co., Dept P-159, Vineland, N. J.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Neutronics Research Co., 165 Lake St., Waltham, Mass.
Nuclear Science Associates, 55 Manor Drive, Newark 6, N. J.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Research Specialties Co., 2005 Hopkins St., Berkeley 7, Calif.
Schleicher & Schuell Co., Carl, Keene, N. H.
Thomas Co., Arthur H. Vine St. at Third, Box 779, Philadelphia 5, Pa.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancas., England
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

MICROSCOPES—Electron

American Optical Co., Instrument Div., Box A, Buffalo 15, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.

MICROSCOPES—Optical

American Optical Co., Instrument Div., Box A, Buffalo 15, N. Y.
Atomic Laboratories, 3086 Claremont Ave., Berkeley, Calif.
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Ercona Corp., 551 Fifth Ave., New York, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Leitz, Inc., E., 468 Fourth Ave., New York, N. Y.
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
Oppiem Co., Inc., 83 Uhland St., East Rutherford, N. J.

Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Standard Pressed Steel Co., Box 1033, Jenkintown, Pa.

MICROSPECTROSCOPES

American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa.
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Neutronics Research Co., 165 Lake St., Waltham, Mass.

MICROTOMES

American Optical Co., Instrument Div., Box A, Buffalo 15, N. Y.
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Cambridge Instrument Co., Inc., 3529 Grand Central Terminal, New York 17, N. Y.
Custom Scientific Instruments, Inc., P. O. Box 170, Kearny, N. J.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.
Leitz, Inc., E., 468 Fourth Ave., New York N. Y.
Mico Instrument Co., 82 S. Trowbridge St., Cambridge 38, Mass.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Servall, Inc., Ivan, P. O. Box 230, Pearl St., Norwalk, Conn.
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.

MICROWAVE APPARATUS

See also TUBES—ELECTRON—Microwave

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa.
APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60
BAIRD-ATOMIC INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Barr & Stroud Ltd. Caxton St., Anniesland, Glasgow, W. 3, Scotland
C. G. S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Cado Mfg. Co., A Div. of Electromation Co., 1101 Olympic Blvd., Santa Monica, Calif.
Canoga Corp., 8955 Sepulveda Blvd., Van Nuys, Calif.
Cascade Research Corp., 53 Victory Lane, Los Gatos, Calif.
CENTRAL RESEARCH LABORATORIES, INC., Red Wing, Minn. ADV. PG. 9
Clegg Laboratories Div. of Clegg, Inc., Ridgedale & Hanover Aves., Morristown, N. J.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cubic Corp., 5575 Kearny Villa Rd., San Diego 11, Calif.
Dalmo Victor Co., 1515 Industrial Way, Belmont, Calif.
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
Diamond Antenna & Microwave Corp., 7 North Ave., Wakefield, Mass.
Electromation Co., 1646 18th St., Santa Monica, Calif.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Empire Devices Products Corp., Amsterdam, N. Y.
Farnsworth Electronics Co., Div. of IT&T, Fort Wayne, Ind.
General Electric Co., Communication Products Dept., Electronics Park, Syracuse, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Goodyear Aircraft Corp., 1210 Massillon Rd., Akron 15, Ohio
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Hughes Products, Los Angeles 45, Calif.
International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
Kearfott Co., Inc., Western Div., 253 N. Vinedo Ave., Pasadena 8, Calif.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Lenkurt Electric Co., 1105 County Rd., San Carlos, Calif.
LEVINTHAL ELECTRONIC PRODUCTS, INC., Stanford Industrial Park, Palo Alto, Calif. ADV. PG. 190
McMillan Industrial Corp., Brownville Avenue Plant, Ipswich, Mass.
Narda Microwave Corp., The, 160 Herricks Rd., Mineola, N. Y.
NARDA ULTRASONICS CORP., THE, Sub. of The Narda Microwave Corp., 158 Herricks Rd., Mineola, N. Y. ADV. PG. 121
Mico Instrument Co., 82 S. Trowbridge St., Cambridge 38, Mass.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Polarad Electronics Corp., 43–20 34th St., Long Island City 1, N. Y.
Radiation, Inc., P. O. Box 37, Melbourne, Fla.
Raytheon Mfg. Co., Commercial Equipment Div., 100 River St., Waltham, Mass.
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Sperry Gyroscope Div. of Sperry-Rand Corp., Great Neck, N. Y.
Standard Electronics Div. of Radio Engineering Labs., Inc., 29–01 Borden Ave., Long Island City 1, N. Y.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Technicraft Labs., Inc., Thomaston-Waterbury Rd., Thomaston, Conn.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Tel-Instrument Electronics Corp., 728 Garden St., Carlstadt, N. J.
Thompson Products, Inc., 2196 Clarkwood Ave., Cleveland 3, Ohio
Vectron, Inc., 1620 Trapelo Rd., Waltham 54, Mass.
Waltham Electronics Corp., 751 Main St., Waltham, Mass.

MILLS & GRINDERS

Abbe Engineering Co., 50 Church St., New York 7, N. Y.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hammel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
International Engineering, Inc., 1200 Bolander Ave., Dayton, Ohio
Kennametal, Inc., Latrobe, Pa.
L & S MACHINE CO., INC., P. O. Box 317, R. D. #2, Latrobe, Pa. ADV. PG. 57
METALS DISINTEGRATING CO., INC., P. O. Box 290, Elizabeth, N. J. ADV. PG. 205
Miller & Son, Inc., Franklin, 36 Meadow St., East Orange, N. J.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
Nordberg Mfg. Co., Milwaukee, Wis.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Sturtevant Mill Co., Park & Clayton Sts., Boston 22, Mass.
Thomas Co., Arthur H., Vine St. at Third, Box 779, Philadelphia 5, Pa.
U. S. Stoneware Co., Akron 9, Ohio

MILLS—Powdered Metal Compacting

Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Fenn Manufacturing Co., The, 200 Fenn Rd., Newington, Conn.
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Sintercast Corp. of America, 134 Woodworth Ave., Yonkers, N. Y.
Stanat Mfg. Co., Inc., 571 Shames Drive, Westbury, N. Y.

MIXERS—Laboratory

Abbe Engineering Co., 50 Church St., New York 7, N. Y.
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
Eastern Industries, Inc., 100 Skiff St., Hamden, Conn.
Ertel Engineering Corp., Kingston 31, N. Y.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hammel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.
International Engineering, Inc., 1200 Bolander Ave., Dayton, Ohio
LaPine & Co., Arthur S., 6001 S. Knox Ave., Chicago 29, Ill.
Metalab Equipment Co., Div. of Norbute Corp., 282 Duffy Ave., Hicksville, N. Y.
Miller & Son, Inc., Franklin P., 36 Meadow St., East Orange, N. J.
Mixing Equipment Co., 192 Mt. Read Blvd., Rochester 11, N. Y.
NARDA ULTRASONICS CORP., THE, Sub. of The Narda Microwave Corp., 158 Herricks Rd., Mineola, N. Y. ADV. PG. 121
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Servall, Inc., Ivan, P. O. Box 230, Pearl St., Norwalk, Conn.
Townson & Mercer, Ltd., Croydon, Surrey, England
Tri-R Instruments, 24–15 44th Rd., Long Island City 1, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.

MODERATORS—Neutron

See GRAPHITE
METALS & ALLOYS—Beryllium
WATER—Heavy

MONITORS—Air Particle

Aerojet-General Nucleonics, San Ramon, Calif.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Cosmic Radiation Labs., Inc., 247 Blue Point Ave., Blue Point, N. Y.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Nash & Thompson Ltd., Oakcroft Rd., Chessington, Surrey, England
NUCLEAR-ELECTRONICS CORP., 2632–36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Patterson Mees Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

MONITORS—Area Radioactivity

Aerojet-General Nucleonics, San Ramon, Calif.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34–01 30th St., Long Island City 6, N. Y. ADV. PG. 181
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Assembly Products, Inc., Chesterland 6, Ohio
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Davtron Engineering, 1 Winslow St., Redwood City, Calif.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fleming Radio (Developments) Ltd., Stevenage, Herts, England, U. K.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotope Developments Ltd., Boonham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
JORDAN ELECTRONICS A DIV. OF THE VICTOREEN INSTRUMENT CO., 3025 W. Mission Rd., Alhambra, Calif. ADV. PG. 188, 189
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12415 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Measurement Engineering Ltd., Arnprior, Ontario, Canada

NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Ohmart Corp., 2236 Begen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Precision Radiation Instruments, Inc., 4223 W. Jefferson Blvd., Los Angeles 16, Calif.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Salus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 195
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Uranium Ore & Supply Co., 546 W. Lake St., Chicago 6, Ill.
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

MONITORS—Clinical

See MONITORS—Laboratory

MONITORS—Hand, Foot & Portable

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Barker & Williamson, Inc., Canal & Beaver, Bristol, Pa.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Eberline Instrument Div., Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
NUCLEAR-ELECTRONICS CORP., 2632–36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 195

MONITORS—Laboratory

Aerojet-General Nucleonics, San Ramon, Calif.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
Airmec, Ltd., High Wycombe, Buckinghamshire, England
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Dynatron Radio Ltd., Castle Hill, Maidenhead, Berks, England
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E., 13, England
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 49, Mass.
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Isotope Developments Ltd., Boenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12415 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
NUCLEAR-ELECTRONICS CORP., 2632–36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

MONITORS—Neutron Flux

Aerojet-General Nucleonics, San Ramon, Calif.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34–01 30th St., Long Island City 6, N. Y. ADV. PG. 181
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Isotope Developments Ltd., Boenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12415 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Nucor Research, Inc., 2421 Walcott, Ferndale, Mich.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

MONITORS—Radioactivity

See CHAMBERS, Ionization; COUNTERS, etc.

MONITORS—Water

Aerojet-General Nucleonics, San Ramon, Calif.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Cosmic Radiation Labs., Inc., 247 Blue Point Ave., Blue Point, N. Y.
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Nash & Thompson Ltd., Oakcroft Rd., Chessington, Surrey, England
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV PG. 166, 167
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

MOTOR-GENERATOR SETS

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Barker Sales Co., 996–8 Edgewater Ave., Ridgefield, N. J.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.
Continental Electric Co., Inc., 334 Ferry St., Newark 5, N. J.
D & R Ltd., 402 E. Gutierrez St., Santa Barbara, Calif.
Dalmotor Co., Div. of Dalmo Victor Div. of Textron Inc., 1375 Clay St., Santa Clara, Calif.
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Elcar, Inc., 1501 W. Congress St., Chicago 7, Ill.
Electric Machinery Mfg. Co., 800 Central Ave., Minneapolis 13, Minn.
Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio
Electric Specialty Co., 211 South St., Stamford, Conn.
Electro Dynamic Div. of General Dynamics Corp., 163 Avenue A, Bayonne, N. J.
Elliott Co., Jeanette, Pa.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Electric Co., Medium AC Motor & Generator Dept., 1 River Rd., Schenectady 5, N. Y.
Generator Corp., Manassas, Va.
Howard Industries, Inc., Divisions: Cyclohm Motor Corp., Electric Motor Corp., Racine, Wis.
Leach Corp., Inst Div., 18435 Susana Rd., Long Beach, Calif.
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, Ohio
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Motoresearch Co., 1600 Junction Ave., Racine, Wis.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Sangamo Electric Co., Electronics Div., Springfield, Ill.
Vara Mfg. Co., Inc., 2201 Walnut St., Garland, Texas
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

MOTORS—A-C

Air Marine Motors, Inc., 369 Bay View Ave., Amityville, N. Y.
Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y.
Airborne Accessories Corp., 1414 Chestnut Ave., Hillside 5, N. J.
Alliance Mfg. Co., Lake Park Blvd., Alliance, Ohio
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Barber-Colman Co., Electrical & Small Motors Div., Rockford, Ill.
Barker Sales Co., 996–8 Edgewater Ave., Ridgefield, N. J.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Borg Equipment Div., The George W. Borg Corp., 120 S. Main St., Janesville, Wis.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.

Chicago Aerial Industries, Inc., 1980 Hawthorne Ave., Melrose Park, Ill.
Continental Electric Co., Inc., 334 Ferry St., Newark 5, N. J.
Cramer Controls Corp., Box 83, Centerbrook, Conn.
D & R, Ltd., 402 E. Gutierrez St., Santa Barbara, Calif.
Dalmo Victor Co., 1515 Industrial Way, Belmont, Calif.
Dalmotor Co., Div. of Dalmo Victor Div. of Textron Inc., 1375 Clay St., Santa Clara, Calif.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Elcor, Inc., 1501 W. Congress St., Chicago 7, Ill.
Electric Indicator Co., Inc., Camp Ave., Springdale, Conn.
Electric Machinery Mfg. Co., 800 Central Ave., Minneapolis 13, Minn.
Electric Specialty Co., 211 South St., Stamford, Conn.
Electro Dynamic Div. of General Dynamics Corp., 163 Avenue A, Bayonne, N. J.
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Elliott Co., Jeannette, Pa.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
Fasco Industries, Inc., Rochester 2, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Electric Co., Medium AC Motor & Generator Dept., 1 River Rd., Schenectady 5, N. Y.
Hayden Co., A. W., The, 232 N. Elm St., Waterbury, Conn.
Haydon Mfg. Co., 245 E. Elm St., Torrington, Conn.
Howard Industries, Inc., Divisions: Cyclohm Motor Corp., Electric Motor Corp., Racine, Wis.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
Leach Corp., Inet Div., 18435 Susana Rd., Long Beach, Calif.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, Ohio
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Motorsearch Co., 1600 Junction Ave., Racine, Wis.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Peerless Instrument Co., Inc., 90–15 Corona Ave., Elmhurst 73, N. Y.
Redmond Co., Inc., Owosso, Mich.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Rotron Mfg. Co., 7 Schoonmaker Lane, Woodstock, N. Y.
Sangamo Electric Co., Electronics Div., Springfield, Ill.
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
United Pressed Products Co., 741 W. Harrison St., Chicago 7, Ill.
U. S. Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles 54, Calif.
Uranium Ore & Supply Co., 546 W. Lake St., Chicago 6, Ill.
Western Gear Corp., General Offices, P. O. Box 182, Lynwood, Calif.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Worthington Corp., Harrison, N. J.

MOTORS—D-C

Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N. Y.
Airborne Accessories Corp., 1414 Chestnut Ave., Hillside 5, N. J.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Amglo Corp., 4333 Ravenswood Ave., Chicago 13, Ill.
Barber-Colman Co., Electrical & Small Motors Div., Rockford, Ill.
Barker Sales Co., 996-8 Edgewater Ave., Ridgefield, N. J.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.
Chicago Aerial Industries, Inc., 1980 Hawthorne Ave., Melrose Park, Ill.
Continental Electric Co., Inc., 334 Ferry St., Newark 5, N. J.
Cramer Controls Corp., Box 83, Centerbrook, Conn.
Dalmo Victor Co., 1515 Industrial Way, Belmont, Calif.
Dalmotor Co., Div. of Dalmo Victor Div. of Textron Inc., 1501 Clay St., Santa Clara, Calif.
Elcor, Inc., 1501 W. Congress St., Chicago 7, Ill.
Electric Indicator Co., Inc., Camp Ave., Springdale, Conn.
Electric Specialty Co., 211 South St., Stamford, Conn.
Electro Dynamic Div. of General Dynamics Corp., 163 Avenue A, Bayonne, N. J.
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Elliott Co., Jeannette, Pa.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Hayden Co., A. W., The, 232 N. Elm St., Waterbury, Conn.
Haydon Mfg. Co., 245 E. Elm St., Torrington, Conn.
Howard Industries, Inc., Divisions: Cyclohm Motor Corp., Electric Motor Corp., Racine, Wis.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, Ohio
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Peerless Instrument Co., Inc., 90–15 Corona Ave., Elmhurst 73, N. Y.
Redmond Co., Inc., Owosso, Mich.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Sangamo Electric Co., Electronics Div., Springfield, Ill.
Servo-Tek Products Co., 1086 Goffe Rd., Hawthorne, N. J.
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Smith Corp., A. O. 3533 N. 27th St., Milwaukee 1, Wis.
Uranium Ore & Supply Co., 546 W. Lake St., Chicago 6, Ill.
Western Gear Corp., General Offices, P. O. Box 182, Lynwood, Calif.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Worthington Corp., Harrison, N. J.

MOTORS—Hydraulic

Dalmo Victor Co., 1515 Industrial Way, Belmont, Calif.
Denison Engineering Div., American Brake Shoe Co., 1160 Dublin Rd., Columbus 16, Ohio
Eastern Industries, Inc., 100 Skiff St., Hamden, Conn.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
Vickers Inc., Div. of Sperry-Rand Corp., Marine & Ordnance Dept., Waterbury 20, Conn.

MOTORS—Reactor, Control-Rod-Drive

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
CHEMPUMP CORP., 1300 E. Mermaid Lane, Philadelphia 18, Pa. ADV. PG. 69
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Peerless Instrument Co., Inc., 90–15 Corona Ave., Elmhurst 73, N. Y.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
Western Gear Corp., General Offices, P. O. Box 182, Lynwood, Calif.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

MOTORS—Servo

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Anatron Div., Endevco Corp., 161 E. California, Pasadena, Calif.
Barber-Colman Co., Electrical & Small Motors Div., Rockford, Ill.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Chicago Aerial Industries, Inc., 1980 Hawthorne Ave., Melrose Park, Ill.
Dalmo Victor Co., 1515 Industrial Way, Belmont, Calif.
Dalmotor Co., Div. of Dalmo Victor Div. of Textron Inc., 1375 Clay St., Santa Clara, Calif.
Daystrom Transicoil Corp., Worcester, Pa.
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Edison Industries, Thomas A., Instrument Div., West Orange, N. J.
Electric Indicator Co., Inc., Camp Ave., Springdale, Conn.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
FORD INSTRUMENT CO., DIV. OF SPERRY-RAND CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 125
G-M Laboratories Inc., 4336 N. Knox Ave., Chicago 41, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Helipot Corp., Newport Beach, Calif.
Howard Industries, Inc., Divisions: Cyclohm Motor Corp., Electric Motor Corp., Racine, Wis.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
Kearfott Co., Inc., Western Div., 253 N. Vinedo Ave., Pasadena 8, Calif.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Minneapolis-Honeywell Regulator Co., Ordnance Div., 600 2nd St., Hopkins, Minn.
Muirhead & Co., Ltd., Beckenham, Kent, England
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Sangamo Electric Co., Electronics Div., Springfield, Ill.
Servomechanisms, Inc., 12500 Aviation Blvd., Hawthorne, Calif.
Servo-Tek Products Co., 1086 Goffe Rd., Hawthorne, N. J.
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
Vickers Inc., Div. of Sperry-Rand Corp., Marine & Ordnance Dept., Waterbury 20, Connd.

NEUTRON SOURCES

See SOURCES—Neutron

NUCLEAR FUEL ELEMENTS

See FUEL ELEMENTS—Nuclear

NUCLEAR HOT CELLS

See HOT CELLS—Nuclear

NUCLEAR MATERIAL ACCOUNTABILITY

See SERVICES

NUCLEAR POWER PLANTS

See POWER PLANTS—Nuclear

NUCLEAR REACTORS

See REACTORS—Nuclear

OHMMETERS

See also MEGOHMMETERS

Airmec Ltd., High Wycombe, Buckinghamshire, England
Associated Research, Inc., 3788 W. Belmont, Chicago, Ill.
Barnes Development Co., 213 W. Baltimore Pike, Lansdowne, Pa.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
Electro-Measurements, Inc., 7524 S. W. Macadam Ave., Portland 1, Ore.
Epco Electronics, Inc., 140 Liberty St., New York, N. Y.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Gulton Industries, Durham Ave., Metuchen, N. J.
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 18, Ohio
Hycon Electronics, Inc., P. O. Bin D, Pasadena, Calif.
Industrial Development Labs., Inc., 17 Pollock Ave., Jersey City 5, N. J.

International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12415 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Precision Apparatus Co., Inc., 70–31 84th St., Glendale 27, N. Y.
Q.V.S., Inc., 20 N. 15th St, East Orange, N. J.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Servo-Tek Products Co., 1086 Goffe Rd., Hawthorne, N. J.
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Shurite Meters, 35 Hamilton St., New Haven 8, Conn.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Teletronics Laboratory, Inc., 54 Kinkel St., Westbury, N. Y.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Winslow Co., Inc., 9 Liberty St., Newark 2, N. J.

OILED FIRED SUPERHEATERS

See POWER PLANT EQUIPMENT

OILS—High Vacuum

See VACUUM EQUIPMENT

OPTICAL INSTRUMENTS & PARTS

Abbaco Supply Co., 179–15 Jamaica Ave., Jamaica 32, N. Y.
American Optical Co., 28 Mechanic St., Southbridge, Mass.
American Optical Co., Instrument Div., Box A, Buffalo 15, N. Y.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Berndt-Bach, Inc., 6900 Romaine St., Los Angeles 38, Calif.
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Celltex Electronic Co., 3 Traverse Terrace, Malden 48, Mass.
Chicago Aerial Industries, Inc., 1980 Hawthorne Ave., Melrose Park, Ill.
Chicago Apparatus Co., 1735 N. Ashland Ave., Chicago 22, Ill.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
Eichner Instruments Co., L. C., 19 Sebago St., Clifton, N. J.
Epic, 154 Nassau St., New York 38, N. Y.
Ercona Corp., 551 Fifth Ave., New York, N. Y.
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Graflex, Inc., 154 Clarissa St., Rochester 8, N. Y.
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
HAYWARD SCIENTIFIC GLASS CORP., 217 N. Magnolia Ave., Whittier, Calif. ADV. PG. 207
Hett Associates, Inc., 603 Grand Ave., Englewood, N. J.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 130
Leitz, Inc., E., 468 Fourth Ave., New York, N. Y.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
Pacific Transducer Corp., 11836 S. W. Pico Blvd., Los Angeles 64, Calif.
Pancro Mirrors, Inc., 2958 Los Feliz Blvd., Los Angeles 39, Calif.
Pearless Instrument Co., Inc., 90–13 Corona Ave., Elmhurst 73, N. Y.
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Phoenix Precison Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Process & Instruments, 15 Stone Ave., Brooklyn 23, N. Y.
Research Development Manufacture, 429 E. Callom St., Philadelphia 44, Pa.
SINGLE CRYSTAL CORP. OF AMERICA, R. D. 1, Saxonburg Blvd., Saxonburg, Pa. ADV. PG. 175
Tinsley Laboratories, Inc., 2526 Grove St., Berkeley 4, Calif.
Whitehead & Haag Co., The, 272 Sussex Ave., Newark 1, N. J.
Zenith Optical Lab., 1940 Great Neck Rd., Copiague, N. Y.

OSCILLOGRAPHS

Allegany Instrument Co., Inc., Cumberland, Md.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Cascade Research Corp., 53 Victory Lane, Los Gatos, Calif.
CENTRAL RESEARCH LABORATORIES, INC., Red Wing, Minn. ADV. PG. 9
Century Electronics & Instruments, Inc., P. O. Box 6216, Tulsa 17, Okla.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Electro Medical Lab., Inc., South Woodstock 6, Vt.
Epic, 154 Nassau St., New York 38, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Hathaway Instrument Div., Hamilton Watch Co., 5900 E. Jewell, Denver, Colo.
Holland Div. of Minneapolis-Honeywell Regulator Co., 5200 E. Evans Ave., Denver 22, Colo.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 18, Ohio
Hughes Products, Los Angeles 45, Calif.
Industrial Instrument Div., Mandrel Industries, Inc., 5134 Glenmont, Houston, Texas
Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
Offner Electronics Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Precision Apparatus Co., Inc., 70–31 84th St., Glendale 27, N. Y.
Sanborn Co., Industrial Div., 175 Wyman St., Waltham 54, Mass.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Texas Instruments Incorporated 6000 Lemmon Ave., Dallas 9, Texas
Waterman Products Co., Inc., 2445–63 Emerald St., Philadelphia 25, Pa.

OSCILLOSCOPES

Airmec Ltd., High Wycombe, Buckinghamshire, England
American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa.
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Control Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Daven Co., The, Route 10, Livingston, N. J.
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
Edgerton, Germeshausen & Grier, Inc., 160 Brookline Ave., Boston 15, Mass.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
Feller Engineering & Mfg. Co., 8026 N. Monticello Ave., Skokie, Ill.
Furzehill Laboratories Ltd., 57, Clarendon Rd., Watford, Herts, England
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Hickok Electrical Instrument Co., The, 10514 Dupont Ave., Cleveland 8, Ohio
Hughes Products, Los Angeles 45, Calif.
Hycon Electronics, Inc., P. O. Bin D, Pasadena, Calif.
International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio
Laboratory for Electronics, Inc., 75 Pitts St., Boston 15, Mass.
Lavoie Laboratories, Inc., Matawan-Freehold Rd., Morganville, N. J.
Leland Instruments, Ltd., 22–23 Millbank, London, Westminster, S. W. 1, England
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Parisier & Co., Maurice I., 741–745 Washington St., New York 14, N. Y.
Pearless Instrument C., Inc., 90–13 Corona Ave., Elmhurst 73, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Precision Apparatus Co., Inc., 70–31 84th St., Glendale 27, N. Y.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Tel-Instrument Electronics Corp., 728 Garden St., Carlstadt, N. J.
Trad Electronics Corp., 1000 First Ave., Asbury Park, N. J.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Waterman Products Co., Inc., 2245–63 Emerald St., Philadelphia 5, Pa.
Wave Particle Corp., P. O. Box 252, Menlo Park, Calif.

OVENS

See FURNACES

PACKINGS—Mechanical

See SEALS—Mechanical

PAINTS—Protective

See also COATINGS—Protective

Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.
American Durafilm Co., Inc., 2300 Washington St., Newton Lower Falls, Mass.
Arco Co., 7301 Bessemer Ave., Cleveland 27, Ohio
ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Biggs Co., Carl H., 2255 Barry Ave., West Los Angeles 64, Calif.
Bisonite Co., Inc., P. O. Box 84, Kenmore Station, Buffalo 17, N. Y.
Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
Carboline Co., 32 Hanley Industrial Court, St. Louis 17, Mo.
Corrosite Corp., 64 S. Sixth St., Brooklyn 11, N. Y.
DU PONT DE NEMOURS & CO., INC., E. I., Wilmington 98, Del. ADV. PG. 10
Electro Chemical Engineering & Mfg. Co., 750 N. Broad St., Emmaus, Pa.
Ellis and Watts Products, Inc., Monroe at Spencer, Cincinnati 36 (Rossmoyne), Ohio
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
Fiequil Products, Inc., Cobleskill, N. Y.
General Cement Mfg. Co., Div. of Textron, Inc., 400 S. Tyman St., Rockford, Ill.
Glidden Co., 900 Union Commerce Bldg., Cleveland 14, Ohio
Houghton Laboratories, Inc., Houghton Ave., Olean, N. Y.
Inertol Co., Inc., 484–7 Frelinghuysen Ave., Newark 12, N. J.
Insul-Mastic Corp. of America, 7750 W. 61st Place, Summit, Ill.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Maas & Waldstein Co., 2121 McCarter Highway, Newark 4, N. J.
Metal & Thermit Corp., Rahway, N. J.
National Lead Co., 111 Broadway, New York 6, N. Y.
Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.
Pittsburgh Plate Glass Co., 1 Gateway Center, Pittsburgh 22, Pa.
Rem Chemicals, Inc., 200 E. Olive St., Gardena, Calif.
Reilly Tar & Chemical Corp., 1615 Merchants Bank Bldg., Indianapolis 4, Ind.
Sauereisen Cements Co., Sauereisen Bldg., Pittsburgh 15, Pa.
Sannaborn Sons, Inc., L., 404 Fourth Ave., New York 16, N. Y.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio.
Varnitan Co., 416 N. Varney St., Burbank, Calif.
Varoc Co., 147 Meadow Rd., Rutherford, N. J.

PAPER—Absorbent

ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Eaton-Dikeman Co., Mount Holly Springs, Pa.
Pittsburgh Plate Glass Co., 1 Gateway Center, Pittsburgh 22, Pa.
Schleicher & Schuell Co., Carl, Keene, N. H.

VIENER & SONS, HYMAN, 5300 Hatcher St., Dept. NBG, Richmond 5, Va. ADV. PG. 205

PAPER—Recording

Alden Electronic & Impulse Recording Equipment Co., Westboro, Mass.
Alfax Paper & Engineering Co., P. O. Box 125, Westboro, Mass.
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Century Electronics & Instruments, Inc., P. O. Box 6216, Tulsa 17, Okla.
DU PONT DE NEMOURS & CO., INC., E. I., Wilmington 98, Del. ADV. PG. 10
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Photo Products Co., Inc., 15 Summit Ave., Chatham, N. J.
Holland Div. of Minneapolis-Honeywell Regulator Co., 5200 E. Evans Ave., Denver 22, Colo.
Hogan Laboratories, Inc., 185 Perry St., New York 14, N. Y.
Muirhead & Co., Ltd., Beckenham, Kent, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Texas Instruments Incorporated, 6000 Lemmon Ave., Dallas 9, Texas
Varian Associates, 611 Hanson Way, Palo Alto, Calif.

PERISCOPES

See also VIEWING EQUIPMENT—Optical, Remote and OPTICAL INSTRUMENTS

Barr & Stroud Ltd., Caxton St., Anniesland, Glasgow, W. 3, Scotland
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Belock Instrument Corp., 111-01 14th Ave., College Point, N. Y.
Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa.
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 150
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Tinsley Laboratories, Inc., 2526 Grove St., Berkeley 4, Calif.

PHARMACEUTICALS—Radioactive

See also ISOTOPE-LABELED COMPOUNDS

Abbott Laboratories, North Chicago, Ill.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Bios Laboratories, Inc., 17 W. 60th St., New York 23, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120

PHOSPHORS—Scintillation

See SCINTILLATORS

PHOTOGRAPHIC FILM—for Dosimeters

DU PONT DE NEMOURS & CO., INC., E. I., Wilmington 98, Del. ADV. PG. 10
Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
LANDAUER, JR., & CO., R. S., 24 Plaza, Park Forest, Ill. ADV. PG. 168
Minimax Co., 5905 N. Clark St., Chicago 26, Ill.
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208

PHOTOGRAPHIC MATERIALS—for Recording Instruments

Ansco Division, General Aniline & Film Corp., Binghamton, N. Y.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Century Electronics & Instruments, Inc., P. O. Box 6216, Tulsa 17, Okla.
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
DU PONT DE NEMOURS & CO., INC., E. I., Wilmington 98, Delaware. ADV. PG. 10
Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
General Photo Products Co., Inc., 15 Summit Ave., Chatham, N. J.
Graflex, Inc., 154 Clarissa St., Rochester 8, N. Y.
Holland Div. of Minneapolis-Honeywell Regulator Co., 5200 E. Evans Ave., Denver 22, Colo.

PHOTOGRAPHIC PLATES & EMULSIONS—Nuclear

Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas

PHOTOMETERS—Flame

Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Phoenix Precision Instrument Co., 3803-05 N. 5th St., Philadelphia, Pa.
Process & Instruments, 15 Stone Ave., Brooklyn 23, N. Y.
Scientific Instruments Div. of Beckman Instruments, Inc., Fullerton, Calif.

PHOTOMETERS—Light-Comparing

American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
EL DORADO ELECTRONICS CO., 1401 Middle Harbor Rd., Oakland, Calif. ADV. PG. 202
Electro-Physics Co., 257-L Broadway, New York 7, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Phoenix Precision Instrument Co., 3803-05 North 5th St., Philadelphia, Pa.
Photovolt Corp., 95 Madison Ave., New York 16, N. Y.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, L. I., N. Y.
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.

PIPE

See TUBING

PIPE FITTINGS & ACCESSORIES

(Includes Hangers, etc.)

Aeroquip Corp., 300 S. East St., Jackson, Mich.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Allied Plastics Supply Corp., 73 Cliff St., New York 38, N. Y.
Alloy Flange & Fitting Corp., 222 Eagle St., Brooklyn, N. Y.
All-Stainless Inc., 36 Rugg Road, Allston 34, Mass.
BABCOCK & WILCOX CO., TUBULAR PRODUCTS DIV., Beaver Falls, Pa. ADV. PG. 71
Barnstead Still & Sterilizer Co., 84 Lanesville Terrace, Boston 31, Mass.
Bergen Pipesupport Co., 50 Church St., New York, N. Y.
Cooper Alloy Corp., Bloy St. & Ramsey Ave., Hillside 5, N. J.
Corley Co., Inc., The, 220 W. 42nd St., New York 36, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
CRANE CO., 836 Michigan Ave., Chicago 5, Ill. ADV. PG. 58
CRAWFORD FITTING CO., 884 E. 140th St., Cleveland 10, Ohio. ADV. PG. 106
Durham Co., Inc., 450 N. Findlay St., Dayton, Ohio
Evans Pipe Co., The, 23 NewPort Ave., Uhrichsville, Ohio
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Grinnell Corp., 260 W. Exchange St., Providence 1, R. I.
Haynes Stellite Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York, N. Y.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
LADISH CO., 5458 S. Packard Ave., Cudahy, Wis. ADV. PG. BA-8E
Leavitt Machine Co., The, 10 E. River St., Orange, Mass.
Logan Clay Products Co., Box 698, Logan, Ohio
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Pittsburgh Piping & Equipment Co., 158 49th St., Pittsburgh, Pa.
Resistoflex Corp., Roseland, N. J.
Robinson Clay Products Co., The, 65 W. State St., Akron 9, Ohio
Special Screw Products Co., Bedford, Ohio
Speedline Stainless Steel Fittings Div. of Horace T. Potts Co., Erie Ave. & D St., Philadelphia 34, Pa.
Stroud Products Corp., P. O. Box 447, Gadsden, Ala.
Swepco Tube Corp., 1 Clifton Blvd., Clifton, N. J.
Taylor Forge & Pipe Works, Inc., 4735 W. 14th St., Chicago 90, Ill.
TUBE TURNS DIV. OF NATIONAL CYLINDER GAS CO., 224 E. Broadway, Louisville, Ky. ADV. PG. 39
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.
Walworth Co., 60 E. 42nd St., New York 17, N. Y.
Weatherhead Co., The, 128 W. Washington Blvd., Fort Wayne, Ind.
Welding Fittings Corp., New Castle, Pa.

PIPE JOINTS—Flexible

See also BELLOWS & EXPANSION UNITS

Barco Mfg. Co., 500 N. Hough St., Barrington, Ill.
Moran Flexible Joint Co., Louisville, Ky.

PIPETTES

Armstrong Cork Co., Lancaster, Pa.
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Clay-Adams, Inc., 141 E. 25th St., New York 10, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
General Scientific Equipment Co., 7516 Limekiln Pike, Philadelphia 50, Pa.
Kontes Glass Co., Dept. P-159, Vineland, N. J.
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Shaman & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancas, England
Townson & Mercer, Ltd., Croydon, Surrey, England
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
Will Corp., Box 1050, Rochester 3, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

PIPETTES—Automatic

Clay-Adams, Inc., 141 E. 25th St., New York 10, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.
Isotope Accessories Co., Box 9354, Philadelphia 39, Pa.
Kontes Glass Co., Dept. P-159, Vineland, N. J.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Research Specialties Co., 2005 Hopkins St., Berkeley 7, Calif.
Servall, Inc., Ivan, P. O. Box 230, Pearl St., Norwalk, Conn.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancas, England
Townson & Mercer, Ltd., Croydon, Surrey, England

Tri-R Instruments, 24-15 44th Rd., Long Island City 1, N. Y.
Will Corp., Box 1050, Rochester 3, N. Y.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.

PIPETTORS—Remote

Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Science Associates, 55 Manor Drive, Newark 6, N. J.

PIPING

See TUBING

PLANCHETS

ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Pacific Nuclear Co., 5439 Geary Blvd., San Francisco 21, Calif.
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Research Specialties Co., 2005 Hopkins St., Berkeley 7, Calif.
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120

PLASTICS—Inert

Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Allied Resineus Products Inc., Box 620, Conneaut, Ohio
Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.
American Agile Corp., P. O. Box 168, Bedford, Ohio
American Durafilm Co., Inc., 2300 Washington St., Newton Lower Falls, Mass.
American Products Mfg. Co., Inc., 8127-33 Oleander St., New Orleans 18, La.
Anchor Plastics Co., Inc., 36-36 36th St., Long Island City 6, N. Y.
Bakelite Co., A Div. of Union Carbide & Carbon Corp., 420 Lexington Ave., New York 17, N. Y.
Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
Dore, Inc., John L., 5408 Schuler St., Houston, Texas
Dow Chemical Co., Midland, Mich.
Dow Corning Corp., Midland, Mich.
DU PONT DE NEMOURS & CO., INC., E. I., Wilmington 98, Del. ADV. PG. 10
Electro Technical Products Div. of Sun Chemical Corp., 113 E. Centre St., Nutley, N. J.
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
Emerson Plastics Corp., 1383 Seabury Ave., Bronx 61, N. Y.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
Goodrich Chemical Co., B. F., 3135 Euclid Ave., Cleveland 15, Ohio
Hoosier Tarpaulin & Canvas Goods Co., 1302 W. Washington Ave., Indianapolis 6, Ind.
Houghton Laboratories, Inc., Houghton Ave., Olean, N. Y.
Kendall Co., The, Polyken Sales Div., 309 W. Jackson Blvd., Chicago 6, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
McMillan Industrial Corp., Brownville Avenue Plant, Ipswich, Mass.
Micromold Corp., 1 School St., Yonkers, N. Y.
Minnesota Mining & Mfg. Co., Jersey City Chemical Div., 75 Drovers St., Jersey City 3, N. J.
Monsanto Chemical Co., Plastics Div., 600 Monsanto Ave., Springfield 2, Mass.
National Vulcanized Fibre Co., Wilmington 99, Del.
Nopco Chemical Co., 15 Essex St., Harrison, N. J.
Penn Fibre & Specialty Co., 2020 E. Westmoreland St., Philadelphia 34, Pa.
Polymer Corp., The, Reading, Pa.
Ram Chemicals, Inc., 200 E. Olive St., Gardena, Calif.
Rasdel Corp., P. O. Box 217, Rio Grande, N. J.
Resistoflex Corp., Roseland, N. J.
Rohm & Haas Co., Washington Square, Philadelphia 5, Pa.
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
Silicones Division, Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Sparta Mfg. Co., Div. of U. S. Ceramic Tile Co., Dover, Ohio
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Westlake Plastics Co., West Lenni Rd., Lenni Mills, Pa.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

PLASTICS—Special Purpose, Irradiated

Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Allied Resineus Products Inc., Box 620, Conneaut, Ohio
APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60
Bakelite Co., A Div. of Union Carbide & Carbon Corp., 420 Lexington Ave., New York 17, N. Y.
Electro Technical Products Div. of Sun Chemical Corp., 113 E. Centre St., Nutley, N. J.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
Nopco Chemical Co., 15 Essex St., Harrison, N. J.
Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.
SINGLE CRYSTAL CORP. OF AMERICA, R. D. 1, Saxonburg Blvd., Saxonburg, Pa. ADV. PG. 175
Trionics Corp., P. O. Box 548, Madison 1, Wis.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Westlake Plastics Co., West Lenni Rd., Lenni Mills, Pa.

PLOTTERS—Electronic

See also RECORDERS

Alden Electronic & Impulse Recording Equipment Co., Westboro, Mass.
Barr & Stroud Ltd., Caxton St., Anniesland, Glasgow, W. 3, Scotland
Barnes Development Co., 213 W. Baltimore Pike, Lansdowne, Pa.
Belock Instrument Corp., 111-01 14th Ave., College Point, N. Y.
Electronic Associates, Inc., Long Branch, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.

PLYWOOD—Shield-Metal-Clad

See also SHIELDING

AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Bettinger Corp., Waltham, Mass.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
Technical Ply-Woods, 6756 Crandon Ave., Chicago 49, Ill.

PNEUMATIC DISPATCH SYSTEMS

AIRMATIC SYSTEMS CORP., 441 Market St., Saddle Brook, Rochelle Park, N. J. ADV. PG. 205
Grover Co., The, 25525 W. Eight Mile Rd., Detroit 19, Mich.
Lamson Corp., Syracuse 1, N. Y.

PNEUMATIC MECHANISMS

Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Haydon Mfg. Co., 245 E. Elm St., Torrington, Conn.
Kahn & Co., Inc., 541 Windsor St., Hartford 1, Conn.
Loar, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
McCormick Selph Associates, 74 Hollister Airport, Hollister, Calif.
U. S. Hoffman Machinery Corp., 103 Fourth Ave., New York 3, N. Y.
Velcor Engineering Corp., 365 Carnegie Ave., Kenilworth, N. J.

POTENTIOMETERS

See RHEOSTATS

POWER PLANT EQUIPMENT

CONDENSERS to VESSELS, Pressure Inclusive

Condensers

Aerco Corp., Paris Ave., P. O. Box 248, Northvale, N. J.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Brown Boveri Corp., 19 Rector St., New York 6, N. Y.
Condenser Service & Engineering Co., Inc., 150 Observer Highway, Hoboken, N. J.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
Croll-Reynolds Engineering Co., 17 John St., New York 38, N. Y.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Elliott Co., Jeanette, Pa.
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y.
General American Transportation Corp., 135 S. LaSalle, Chicago, Ill.
Griscom-Russell Co., Massillon, Ohio
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
New York Shipbuilding Corp., Camden, N. J.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Ross Heat Exchanger Div. of American-Standard, Box 2081, Buffalo 5, N. Y.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Struthers-Wells Corp., Warren, Pa.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
WHEELER MFG. CO., C. H., 19th & Lehigh, Philadelphia 32, Pa. ADV. PG. 112
Worthington Corp., Harrison, N. J.
York Corp., York, Pa.
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

Cooling Towers

Air & Refrigeration Corp., 439 Madison Ave., New York 17, N. Y.
American Blower Div., American Radiator & Standard Corp., 8111 Tireman Ave., Dearborn, Mich.
Carrier Corp., 300 S. Geddes St., Syracuse 1, N. Y.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
ELGIN SOFTENER CORP., 179 S. Grove Ave., Elgin, Ill. ADV. PG. 110
Fluor Products Co., 1200 E. Washington Blvd., Whittier, Calif.
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y.
General Metals, Inc., P. O. Box 448, Greensboro, N. C.
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

Evaporators

Aerco Corp., Paris Ave., P. O. Box 248, Northvale, N. J.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Brown Boveri Corp., 19 Rector St., New York 6, N. Y.
Condenser Service & Engineering Co., Inc., 150 Observer Highway, Hoboken, N. J.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y.
Griscom-Russell Co., Massillon, Ohio
Maxim Silencer Co., The, Homestead Ave., Hartford, Conn.
New York Shipbuilding Corp., Camden, N. J.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Struthers-Wells Corp., Warren, Pa.
United Aircraft Products, Inc., 1116 Solander, Dayton, Ohio
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Worthington Corp., Harrison, N. J.
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

Feed Water Heaters

Aerco Corp., Paris Ave., P. O. Box 248, Northvale, N. J.

ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Brown Boveri Corp., 19 Rector St., New York 6, N. Y.
Condenser Service & Engineering Co., Inc., 150 Observer Highway, Hoboken, N. J.
Croll-Reynolds Engineering Co., 17 John St., New York 38, N. Y.
ELGIN SOFTENER CORP., 179 S. Grove Ave., Elgin, Ill. ADV. PG. 110
Elliott Co., Jeanette, Pa.
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y.
Griscom-Russell Co., Massillon, Ohio
Johnson Corp., 809 Wood St., Three Rivers, Mich.
New York Shipbuilding Corp., Camden, N. J.
Permutit Co., 50 W. 44th St., New York 36, N. Y.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Ross Heat Exchanger Div. of American-Standard, Box 2081, Buffalo 5, N. Y.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
Struthers-Wells Corp., Warren, Pa.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Worthington Corp., Harrison, N. J.
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

Heat Exchangers

Adams Co., Inc., R. P., 473 E. Park Drive, Buffalo 17, N. Y.
Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Aerco Corp., Paris Ave., P. O. Box 248, Northvale, N. J.
Aerojet-General Nucleonics, San Ramon, Calif.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Amersil Co., Inc., 683 Ramsey Ave., Hillside, N. J.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Bettinger Corp., Waltham, Mass.
Brown Boveri Corp., 19 Rector St., New York 6, N. Y.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Combustion Engineering, Inc., 200 Madison Ave., New York 16, N. Y.
Condenser Service & Engineering Co., Inc., 150 Observer Highway, Hoboken, N. J.
Croll-Reynolds Engineering Co., 17 John St., New York 38, N. Y.
Delanium Graphite Co., 134 Elmore Ave., Elizabeth, N. J.
Doyle & Roth Mfg. Co., Inc., 136-50 24th St., Brooklyn 32, N. Y.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Eastern Industries, Inc., 100 Skiff St., Hamden, Conn.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y.
Graver Water Conditioner Co., 216 W. 14th St., New York 11, N. Y.
Griscom-Russell Co., Massillon, Ohio
Heatron, Inc., 333 Eberts Lane, York, Pa.
Loader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
Modine Mfg. Co., Industrial Div., Racine, Wis.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
New York Shipbuilding Corp., Camden, N. J.
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Ross Heat Exchanger Div. of American-Standard, Box 2081, Buffalo 5, N. Y.
S. M. Industrial Div. of Modine Mfg. Co., Racine, Wis.
Schutte & Koerting Co., Cornwell Heights, Bucks County, Pa.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
SOLAR AIRCRAFT CO., 2200 Pacific Highway, San Diego 12, Calif. ADV. PG. 61
Struthers-Wells Corp., Warren, Pa.
Tickle Engineering Works, Inc., Arthur, 30 Delevan St., Brooklyn 31, N. Y.
United Aircraft Products, Inc., 1116 Solander, Dayton, Ohio
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
WHEELER MFG. CO., C. H., 19th & Lehigh, Philadelphia 32, Pa. ADV. PG. 112
Worthington Corp., Harrison, N. J.
York Corp., York, Pa.
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

Oiled Fired Superheaters

BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Combustion Engineering, Inc., 200 Madison Ave., New York 16, N. Y.
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y.
Riley Stoker Corp., 9 Neponset St., Worcester 8, Mass.
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

Steam & Air Strainers

Adams Co., Inc., R. P., 473 E. Park Drive, Buffalo 17, N. Y.
Cash Valve Mfg. Corp., A. W., 666 E. Wabash Ave., Decatur, Ill.
Clark Mfg. Co., 1830 E. 38th St., Cleveland 14, Ohio
Davis Regulator Co., 2539 W. Wahtenaw, Chicago 2, Ill.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Keckley Co., O. C., 3400 Cleveland St., Skokie, Ill.
Kieley & Mueller Co., Inc., 64 Genung St., Middletown, N. Y.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Pyramid Screen Corp., 181 Harvard St., Brookline 46, Boston, Mass.
Ruggles-Klingemann Mfg. Co., Salem, Mass.
Sarco Co., Inc., 350 Fifth Ave., New York 1, N. Y.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Velan Valve Corp., 37 S. River St., Plattsburg, N. Y.

Steam & Air Traps

BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
Clark Mfg. Co., 1830 E. 38th St., Cleveland 14, Ohio
CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. ADV. PG. 58
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Kay & MacDonald, Inc., 11-15 Central Ave., West Orange, N. J.
Leavitt Machine Co., The, 10 E. River St., Orange, Mass.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Sarco Co., Inc., 350 Fifth Ave., New York 1, N. Y.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Velan Valve Corp., 37 S. River St., Plattsburg, N. Y.

Steam Generators

Aerco Corp., Paris Ave., P. O. Box 248, Northvale, N. J.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Combustion Engineering, Inc., 200 Madison Ave., New York 16, N. Y.
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y.
Griscom-Russell Co., Massillon, Ohio
New York Shipbuilding Corp., Camden, N. J.
Riley Stoker Corp., 9 Neponset St., Worcester 8, Mass.
Struthers-Wells Corp., Warren, Pa.
Sulzer Bros. Ltd., New York, 50 Church St., New York 7, N. Y.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Worthington Corp., Harrison, N. J.
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

Turbines—Gas

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Aerojet-General Nucleonics, San Ramon, Calif.
American Turbine Corp., 82 William St., New York 5, N. Y.
Brown Boveri Corp., 19 Rector St., New York 6, N. Y.
Elliott Co., Jeanette, Pa.
Fairchild Engine & Airplane Corp., Engine Div., Deer Park, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Nordberg Mfg. Co., Milwaukee, Wis.
SOLAR AIRCRAFT CO., 2200 Pacific Highway, San Diego 12, Calif. ADV. PG. 61
Sulzer Bros. Ltd., New York, 50 Church St., New York 7, N. Y.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

Turbines—Steam

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Brown Boveri Corp., 19 Rector St., New York 6, N. Y.
Elliott Co., Jeanette, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Sulzer Bros. Ltd., New York, 50 Church St., New York 7, N. Y.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Worthington Corp., Harrison, N. J.

Vessels—Containment

Chicago Bridge & Iron Co., 1305 W. 105th St., Chicago 43, Ill.
GRAVER TANK & MFG. CO., INC., 4809 Tod Ave., East Chicago, Ind. ADV. PG. 127
Pittsburgh Des Moines Steel Co., Pittsburgh 25, Pa.

Vessels—Pressure

Aerco Corp., Paris Ave., P. O. Box 248, Northvale, N. J.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Allied Engineering & Production Corp., 242 Standing Ave., Alameda, Calif.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
Autoclave Eng. Sales Corp., 2930 W. 22nd St., Erie, Pa.
Avondale Marine Ways, Inc., P. O. Box 1030, New Orleans, La.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
Chicago Bridge & Iron Co., 1305 W. 105th St., Chicago 43, Ill.
Combustion Engineering, Inc., 200 Madison Ave., New York 16, N. Y.
Condenser Service & Engineering Co., Inc., 150 Observer Highway, Hoboken, N. J.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Doyle & Roth Mfg. Co., Inc., 136-50 24th St., Brooklyn 32, N. Y.
Duriron Co., Inc., 450 N. Findlay St., Dayton, Ohio
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y.
General Alloys Co., 405 W. First St., Boston 27, Mass.
General American Transportation Corp., 135 S. La Salle, Chicago, Ill.
General Lead Construction Corp., 1800 Harrison Ave., Kearny, N. J.
General Metals, Inc., P. O. Box 448, Greensboro, N. C.
GRAVER TANK & MFG. CO., INC., 4809 Tod Ave., East Chicago, Ind. ADV. PG. 127
Greer Hydraulics, Inc., International Airport, Jamaica 30, N. Y.
Griscom-Russell Co., Massillon, Ohio
HOKE, INC., 233 S. Dean St., Englewood, N. J. ADV. PG. 200
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Loader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
Moorehead Machinery & Boiler Co., 3477 University Ave., Minneapolis 18, Minn.
New York Shipbuilding Corp., Camden, N. J.
Nuclear Engineering Ltd., Greenwich Metal Works, London S. E. 7, England
Nucor Research, Inc., 2421 Walcott, Ferndale, Mich.
PACIFIC COAST ENGINEERING CO., Oak & Clement Sts., Alameda, Calif. ADV. PG. 116
Pittsburgh Des Moines Steel Co., Pittsburgh 25, Pa.
Pittsburgh Piping & Equipment Co., 158 49th St., Pittsburgh, Pa.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
Steel & Alloy Tank Co., 1 Bessemer St., Newark 1, N. J.
Struthers-Wells Corp., Warren, Pa.
Sulzer Bros. Ltd., New York, 50 Church St., New York 7, N. Y.
Sun Shipbuilding & Dry Dock Co., Chester, Pa.
U. S. PIPE & FOUNDRY CO., Burlington, N. J. ADV. PG. 12, 13
WHEELER MFG. CO., C. H., 19th & Lehigh, Philadelphia 32, Pa. ADV. PG. 112
York Corp., York, Pa.
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

POWER PLANTS—Nuclear

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
ATOMICS INTERNATIONAL, A DIV. OF NORTH AMERICAN AVIATION, INC., Box 309, Canoga Park, Calif. ADV. PG. 128, 134, 193
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Brown Boveri Corp., 19 Rector St., New York 6, N. Y.
Electric Boat Div., General Dynamics Corp., Groton, Conn.

Ferguson Co., Inc., H. K., 11th at Walnut, Cleveland 14, Ohio
FORD INSTRUMENT CO., DIV. OF SPERRY-RAND CORP., 31-10 Thomson Ave., Long Island City 1, N. Y. ADV. PG. 125
GENERAL ATOMIC, DIV. OF GENERAL DYNAMICS CORP., P. O. Box 608, San Diego 12, Calif. ADV. PG. 111
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 1, N. Y. ADV. PG. 74, 75, 165
KAISER ENGINEERS, ATOMIC ENERGY DIV., DIV. OF HENRY J. KAISER CO., Oakland 12, Calif. ADV. PG. 11
Kulijian Corp., The, 1200 N. Broad St., Philadelphia 21, Pa.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
PIONEER SERVICE & ENGINEERING CO., 231 S. La Salle St., Chicago 4, Ill. ADV. PG. 72
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
Sargent & Lundy, 140 S. Dearborn St., Chicago 3, Ill.
United Engineers & Constructors, Inc., 1401 Arch St., Philadelphia 5, Pa.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

POWER SUPPLIES—High Voltage (> 10 Kv)

Aerovox Corp., Pacific Coast Div., 2724 S. Peck Rd., Monrovia, Calif.
American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.
Amp, Incorporated, Harrisburg, Pa.
Amp, Incorporated, Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60
Associated Research, Inc., 3788 W. Belmont, Chicago, Ill.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Beta Electric Corp., 333 E. 103rd St., New York 29, N. Y.
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bracke-Seib X-Ray Co., Inc., 16 Pelham Bay Park W., Pelham Manor, N. Y.
Bradley Laboratories, Inc., 168 Columbus Ave., New Haven 10, Conn.
Clegg Laboratories, Div. of Clegg, Inc., Ridgedale & Hanover Aves., Morristown, N. J.
Condenser Products Div. of New Haven Clock & Watch Co., 140 Hamilton St., New Haven, Conn.
Dei Electronics Corp., 521 Homestead Ave., Mount Vernon, N. Y.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Embassy Engineering Corp., 673 Elton Ave., New York 55, N. Y.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
Industrial Transformer Corp., Gouldsboro, Pa.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Leach Corp., Inet Div., 18435 Susana Rd., Long Beach, Calif.
Lee Electric & Mfg. Co., 2806 Clearwater St., Los Angeles 39, Calif.
LEVINTHAL ELECTRONIC PRODUCTS, INC., Stanford Industrial Park, Palo Alto, Calif. ADV. PG. 190
Magnatran, Inc., P. O. Box 211, Kearny, N. J.
Manson Laboratories, Inc., 207 Greenwich Ave., Stamford, Conn.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Maloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.
N. J. E. Corp., 345 Carnegie Ave., Kenilworth, N. J.
Network Mfg. Corp., 213 W. Fifth St., Bayonne, N. J.
Neutronic Associates, 9314 101st Ave., Ozone Park 17, N. Y.
Northeast Scientific Corp., 617 Concord Ave., Cambridge 38, Mass.
Nuclear Aids Corp., 612 N. Michigan Ave., Chicago, Ill.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Peerless Instrument Co., Inc., 90-15 Corona Ave., Elmhurst 73, N. Y.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Philips Electronics Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Radio Development & Research Corp., 100 Pennsylvania Ave., Paterson 3, N. J.
Scientific Electric Corp., 105-119 Monroe St., Garfield, N. J.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.
Societe Anonyme de Machines Electrostatiques, S. P., 150 Grenoble, France
Sorensen & Co., Inc., Richards Ave., South Norwalk, Conn.
SPELLMAN TELEVISION CO., INC., 3029 Webster Ave., Bronx 67, N. Y. ADV. PG. 202
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Universal X-Ray Corp., 1140 N. Western Ave., Chicago 22, Ill.
Vare Mfg. Co., Inc., 2201 Walnut St., Garland, Texas
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167

POWER SUPPLIES—High Voltage (1-10 Kv)

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Adler Electronics, Inc., 1 La Fevre Lane, New Rochelle, N. Y.
Aerovox Corp., Pacific Coast Div., 2724 S. Peck Rd., Monrovia, Calif.
Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.
American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.
Amp, Incorporated, Harrisburg, Pa.
Amp, Incorporated, Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Arnold Magnetics Corp., 3962 Smiley Drive, Culver City, Calif.
Associated Research, Inc., 3788 W. Belmont, Chicago, Ill.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Beta Electric Corp., 333 E. 103rd St., New York 29, N. Y.
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bracke-Seib X-Ray Co., Inc., 16 Pelham Bay Park W., Pelham Manor, N. Y.
Bradley Laboratories, Inc., 168 Columbus Ave., New Haven 10, Conn.
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Central Transformer Co., 910 W. Jackson Blvd., Chicago 7, Ill.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Clegg Laboratories Div. of Clegg, Inc., Ridgedale & Hanover Aves., Morristown, N. J.
Condenser Products Div. of New Haven Clock & Watch Co., 140 Hamilton St., New Haven, Conn.
Dei Electronics Corp., 521 Homestead Ave., Mount Vernon, N. Y.
Deltron, Inc., 2905 N. Leithgow St., Philadelphia 23, Pa.
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Electronic Measurements Co., Inc., Lewis St. & Maple Ave., Eatontown, N. J.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Embassy Engineering Corp., 673 Elton Ave., New York 55, N. Y.
Empire Devices Products Corp., Amsterdam, N. Y.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fluke Mfg. Co., Inc., John, 1111 W. Nickerson St., Seattle 99, Wash.
General Nuclear Corp., 550 Fifth Ave., New York 26, N. Y.
General Photo Products Co., Inc., 15 Summit Ave., Chatham, N. J.
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Hatt Associates, Inc., 603 Grand Ave., Englewood, N. J.
Industrial Transformer Corp., Gouldsboro, Pa.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
KEPCO LABORATORIES, INC., 131-38 Sanford Ave., Flushing 55, N. Y. ADV. PG. 41
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Lown Electronics Co., E. Freehold Rd., Freehold, N. J.
Lee Electric & Mfg. Co., 2806 Clearwater St., Los Angeles 39, Calif.
LEVINTHAL ELECTRONIC PRODUCTS, INC., Stanford Industrial Park, Palo Alto, Calif. ADV. PG. 190
Magnatran, Inc., P. O. Box 211, Kearny, N. J.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Manson Laboratories, Inc., 207 Greenwich Ave., Stamford, Conn.
Maxson Instruments Corp., Sub. of The W. L. Maxson Corp., 47-37 Austell Place, Long Island City 1, N. Y.
Maloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
N. J. E. Corp., 345 Carnegie Ave., Kenilworth, N. J.
Network Mfg. Corp., 213 W. Fifth St., Bayonne, N. J.
Neutronic Associates, 9314 101st Ave., Ozone Park 17, N. Y.
Northeast Scientific Corp., 617 Concord Ave., Cambridge 38, Mass.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Peerless Instrument Co., Inc., 90-15 Corona Ave., Elmhurst 73, N. Y.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Power Designs, Inc., 89-25 130th St., Richmond Hill 18, N. Y.
Power Sources, Inc., Burlington, Mass.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT CO., P. O. Box 733, Silver Spring, Md. ADV. PG. 198
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
Radio Development & Research Corp., 100 Pennsylvania Ave., Paterson 3, N. J.
Scientific Electric Corp., 105-119 Monroe St., Garfield, N. J.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.
SPELLMAN TELEVISION CO., INC., 3029 Webster Ave., Bronx 67, N. Y. ADV. PG. 202
Sorensen & Co., Inc., Richards Ave., South Norwalk, Conn.
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 160
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Vare Mfg. Co., Inc., 2201 Walnut St., Garland, Texas
Vickers Electric Div., Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
Westronics, Inc., 3605 McCart, Fort Worth, Texas

POWER SUPPLIES—High Voltage Regulated

Acme Telectronix Div., NEA Service, Inc., W. Third & Lakeside, Cleveland 13, Ohio
Adler Electronics, Inc., 1 La Fevre Lane, New Rochelle, N. Y.
Aerovox Corp., Pacific Coast Div., 2724 S. Peck Rd., Monrovia, Calif.
American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34-01 30th St., Long Island City 6, N. Y. ADV. PG. 181
Amp, Incorporated, Harrisburg, Pa.
Amp, Incorporated, Chemicals & Dielectrics Div., 155 Part St., Elizabethtown, Pa.
Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139

Arnold Magnetics Corp., 5962 Smiley Drive, Culver City, Calif.
Associated Research, Inc., 3788 W. Belmont, Chicago, Ill.
Atlantic Research Corp., Electromechanical Div., Alexandria, Va.
Atlas Engineering Co., 176 Blue Hill Ave., Roxbury, Mass.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Beta Electric Corp., 333 E. 103rd St., New York 29, N. Y.
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bracke-Seib X-Ray Co., Inc., 16 Pelham Bay Park, W., Pelham Manor, N. Y.
Bradley Laboratories, Inc., 168 Columbus Ave., New Haven 10, Conn.
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Clegg Laboratories Div. of Clegg, Inc., Ridgedale & Hanover Aves., Morristown, N. J.
Condenser Products Div. of New Haven Clock & Watch Co., 140 Hamilton St., New Haven, Conn.
Cosmic Radiation Labs., Inc., 247 Blue Point Ave., Blue Point, N. Y.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Deltron, Inc., 2905 N. Leithgow St., Philadelphia 23, Pa.
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
Electronic Measurements Co., Inc., Lewis St. & Maple Ave., Eatontown, N. J.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Embassy Engineering Corp., 673 Elton Ave., New York 55, N. Y.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fluke Mfg. Co., Inc., John, 1111 W. Nickerson St., Seattle 99, Wash.
General Nuclear Corp., 550 Fifth Ave., New York 26, N. Y.
General Radiological Ltd., 15–18 Clipstone St., London, W. 1, England
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Heath Co., Benton Harbor, Mich.
Hett Associates, Inc., 603 Grand Ave., Englewood, N. J.
Industrial Transformer Corp., Gouldsboro, Pa.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
KEPCO LABORATORIES, INC., 131–38 Stanford Ave., Flushing 55, N. Y. ADV. PG. 41
Kin Tel (Kay Lab), 5725 Kearny Villa Rd., San Diego 11, Calif.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Lawn Electronics Co., E. Freehold Rd., Freehold, N. J.
Leach Corp., Inst Div., 18435 Susana Rd., Long Beach, Calif.
Lee Electric Mfg. Co., 2806 Clearwater St., Los Angeles 39, Calif.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
LEVINTHAL ELECTRONIC PRODUCTS, INC., Stanford Industrial Park, Palo Alto, Calif. ADV. PG. 190
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Manson Laboratories, Inc., 207 Greenwich Ave., Stamford, Conn.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Maxson Instruments Corp., Sub. of The W. L. Maxson Corp., 47–37 Austell Place, Long Island City 1, N. Y.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Meloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
N. J. E. Corp., 345 Carnegie Ave., Kenilworth, N. J.
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
Network Mfg. Corp., 213 W. Fifth St., Bayonne, N. J.
Neutronic Associates, 9314 101st Ave., Ozone Park 17, N. Y.
Northeast Scientific Corp., 617 Concord Ave., Cambridge 38, Mass.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR-ELECTRONICS CORP., 2632–36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
Nuclear Research Corp., Southampton, Pa.
Oregon Electronic Mfg. Co., 2105 S. E. 6th St., Portland, Ore.
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PARSONS CO., RALPH M., ELECTRONICS DIV., 151 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
Peerless Instrument Co., Inc., 90–15 Corona Ave., Elmhurst 73, N. Y.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Peschel Electronics, Inc., 13 Gordon St., New Rochelle, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Power Designs, Inc., 89–25 130th St., Richmond Hill 18, N. Y.
Power Equipment Co., 5740 E. Nevada St., Detroit 34, Mich.
Power Sources Inc., Burlington, Mass.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT CO., P. O. Box 733, Silver Spring, Md. ADV. PG. 198
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
Radio Development & Research Corp., 100 Pennsylvania Ave., Paterson 3, N. J.
Rapid Electric Co., 2881 Middletown Rd., New York, N. Y.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Scientific Electric Corp., 105–119 Monroe St., Garfield, N. J.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.
Societe Anonyme de Machines Electrostatiques, B. P., 150 Grenoble, France
Sola Electric Co., 4633 W. 16th St., Chicago 90, Ill.
Sorensen & Co., Inc., Richards Ave., South Norwalk, Conn.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
SPELLMAN TELEVISION CO., INC., 3029 Webster Ave., Bronx 67, N. Y. ADV. PG. 202
Sperry Gyroscope Div. of Sperry-Rand Corp., Great Neck, N. Y.
Standard Electronics Div. of Radio Engineering Labs., Inc., 29–01 Borden Ave., Long Island City 1, N. Y.
Technical Measurement Corp., 140–142 State St., New Haven, Conn.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.
Varo Mfg. Co., Inc., 2201 Walnut St., Garland, Texas
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Wave Particle Corp., P. O. Box 252, Menlo Park, Calif.

POWER SUPPLIES—Low Voltage (0–1,000 volts)

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Acme Telectronix Div., NEA Service, Inc., W. Third & Lakeside, Cleveland 13, Ohio
Adler Electronics, Inc., 1 La Fevre Lane, New Rochelle, N. Y.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Aerovox Corp., Pacific Coast Div., 2724 S. Peck Rd., Monrovia, Calif.
Aldon Electronics & Impulse Recording Equipment Co., Westboro, Mass.
American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.
Amp, Incorporated, Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Arnold Magnetics Corp., 5962 Smiley Drive, Culver City, Calif.
Associated Research, Inc., 3788 W. Belmont, Chicago, Ill.
Associated Specialties Co., 1751 Main St., Orofield, Pa.
Atlantic Research Corp., Electromechanical Div., Alexandria, Va.
Atlas Engineering Co., 176 Blue Hill Ave., Roxbury, Mass.
Automatic Electric Sales Corp., 1033 Van Buren St., Chicago 7, Ill.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Beta Electric Corp., 333 E. 103rd St., New York 29, N. Y.
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Bogen Co., David, P. O. Box 500 Paramus, N. J.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bradley Laboratories, Inc., 168 Columbus Ave., New Haven 10, Conn.
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Carter Motor Co., 2742 W. George St., Chicago 18, Ill.
Christie Electric Corp., 3410 W. 67th St., Los Angeles 43, Calif.
Clegg Laboratories Div. of Clegg, Inc., Ridgedale & Hanover Aves., Morristown, N. J.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cornell-Dubilier Electric Corp., South Plainfield, N. J.
Cubic Corp., 5575 Kearny Villa Rd., San Diego 11, Calif.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
Del Electronics Corp., 521 Homestead Ave., Mount Vernon, N. Y.
Deltron, Inc., 2905 N. Leithgow St., Philadelphia 33, Pa.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
Dressen-Barnes Corp., 250 N. Vinedo Ave., Pasadena 8, Calif.
Elcor, Inc., 1501 W. Congress St., Chicago 7, Ill.
Electric Regulator Corp., Norwalk, Conn.
Electronic Measurements Co., Inc., Lewis St. & Maple Ave., Eatontown, N. J.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Empire Devices Products Corp., Amsterdam, N. Y.
Engineered Electronics Co., 506 E. First St., Santa Ana, Calif.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fluke Mfg. Co., Inc., John, 1111 W. Nickerson St., Seattle 99, Wash.
Furzehill Laboratories Ltd., 57, Clarendon Rd., Watford, Herts., England
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Electrical Co., Technical Products Dept., Electronics Park, Syracuse, N. Y.
General Magnetics, Inc., 135 Bloomfield Ave., Bloomfield, N. J.
General Nuclear Corp., 550 Fifth Ave., New York 26, N. Y.
General Photo Products Co., Inc., 15 Summit Ave., Chatham, N. J.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
General Radiological Ltd., 15–18 Clipstone St., London, W. 1, England
Gulton Industries, Durham Ave., Metuchen, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Hunter-Bristol Corp., Bristol, Pa.
Industrial Instrument Div., Mandrel Industries, Inc., 5134 Glenmont, Houston, Texas
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
JORDAN ELECTRONICS A DIV. OF THE VICTOREEN INSTRUMENT CO., 3025 W. Mission Rd., Alhambra, Calif. ADV. PG. 188, 189
Kahn & Co., Inc., 541 Windsor St., Hartford 1, Conn.
KEPCO LABORATORIES, INC., 131–38 Sanford Ave., Flushing 55, N. Y. ADV. PG. 41
Kin Tel (Kay Lab), 5725 Kearny Villa Rd., San Diego 11, Calif.
KINNEY MFG. DIV. THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
Krohn-Hite Instrument Co., 580 Massachusetts Ave., Cambridge 39, Mass.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England

Lambda Electronics Corp., 11-11 131st St., College Point 56, N. Y.
Lavoie Laboratories, Inc., Matawan-Freehold Rd., Morganville, N. J.
Lawn Electronics Co., E. Freehold Rd., Freehold, N. J.
Leach Corp., Inst Div., 18435 Susana Rd., Long Beach, Calif.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Lee Electric & Mfg. Co., 2806 Clearwater St. Los Angeles 39, Calif.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, Ohio
Leland Instruments, Ltd. 22-23 Millbank, London, Westminster, S. W. 1, England
Magnatron, Inc., P. O. Box 211, Kearny, N. J.
Magne-Pulse Corp., 11 Godwin Ave., Fair Lawn, N. J.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Manson Laboratories, Inc., 207 Greenwich Ave., Stamford, Conn.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Maxson Instruments Corp., Sub. of The W. L. Maxson Corp., 47-37 Austell Place, Long Island City 1, N. Y.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Menlo Research Laboratory, 538 Phelan Ave., San Jose, Calif.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Minneapolis-Honeywell Regulator Co., Ordnance Div., 600 2nd St., Hopkins, Minn.
Model Rectifier Corp., 1865 Utica Ave., Brooklyn 3, N. Y.
Motorsearch Co., 1600 Junction Ave., Racine, Wis.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
N. J. E. Corp., 345 Carnegie Ave., Kenilworth, N. J.
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
Navigation Computer Corp., 1621 Snyder Ave., Philadelphia 45, Pa.
Network Mfg. Corp., 213 W. Fifth St., Bayonne, N. J.
New York Transformer Co., Inc., Third Ave., Alpha, N. J.
North Hills Electric Co., Inc., 402 Sagamore Ave., Mineola, N. Y.
Northeast Scientific Corp., 617 Concord Ave., Cambridge 38, Mass.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
Oregon Electronic Mfg. Co., 2105 S. E. 6th St., Portland, Ore.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
PARSONS CO., RALPH M., ELECTRONICS DIV., 151 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Peerless Instrument Co., Inc., 90-15 Corona Ave., Elmhurst 73, N. Y.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Paschal Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Philbrick Researches, Inc., George, 230 Congress St., Boston 10, Mass.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Phoenix Precision Instrument Co., 3803-05 N. 5th St., Philadelphia, Pa.
Polaroid Electronics Corp., 43-20 34th St., Long Island City 1, N. Y.
Power Designs, Inc., 89-25 130th St., Richmond Hill 18, N. Y.
Power Equipment Co., 5740 E. Nevada St., Detroit 34, Mich.
Power Sources Inc., Burlington, Mass.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Radio Development & Research Corp., 100 Pennsylvania Ave., Paterson 3, N. J.
Ransom Research, P. O. Box 382, San Pedro, Calif.
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J.
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Sanford Miller Co., 691 Bedford Ave., Brooklyn 6, N. Y.
Sangamo Electric Co., Electronics Div., Springfield, Ill.
Scientific Electric Corp., 105-119 Monroe St., Garfield, N. J.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Sierra Electronic Corp., 3885 Bohannon Drive., Menlo Park, Calif.
Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.
Sorensen & Co., Inc., Richards Ave., South Norwalk, Conn.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Depts., 1400 N. Goodman St., Rochester 9, N. Y.
Superior Electric Co., 83 Laurel St., Bristol, Conn.
Tatler & Cooper, Inc., 75 Front St., Brooklyn, N. Y.
Technical Operations, Inc., South Ave., Burlington, Mass.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Telotronics Laboratory, Inc., 54 Kinkel St., Westbury, N. Y.
Tele-Dynamics, Inc., 5000 Palisade Ave., Philadelphia 3, Pa.
Tel-Instrument Electronics Corp., 728 Gordon St., Carlstadt, N. J.
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Tung-Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J.
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Universal Electronics Co., 1720 22nd St., Santa Monica, Calif.
Varo Mfg. Co., Inc., 2201 Walnut St., Garland, Texas
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 91, Conn.
Yardney Electric Corp., 40 Leonard St., New York 13, N. Y.

POWER SUPPLIES—Nuclear

See BATTERIES

POWER SUPPLIES—Regulated Current

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Adler Electronics, Inc., 1 La Fevre Lane, New Rochelle, N. Y.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Aerovox Corp., Pacific Coast Div., 2724 S. Peck Rd., Monrovia, Calif.
Alden Electronic & Impulse Recording Equipment Co., Westboro, Mass.
Amp, Incorporated, Chemicals & Dielectrics, Div., 155 Park St., Elizabethtown, Pa.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Arnold Magnetics Corp., 5962 Smiley Drive, Culver City, Calif.
Associated Specialties Co., 1751 Main St., Orefield, Pa.
Atlas Engineering Co., 176 Blue Hill Ave., Roxbury, Mass.
Beta Electric Corp., 333 E. 103rd St., New York 29, N. Y.
Bogen Co., David, P. O. Box 500, Paramus, N. J.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bradley Laboratories, Inc., 168 Columbus Ave., New Haven 10, Conn.
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Christie Electric Corp., 3410 W. 67th St., Los Angeles 43, Calif.
Clegg Laboratories Div. of Clegg, Inc., Ridgedale & Hanover Aves., Morristown, N. J.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
Deltron, Inc., 2905 N. Leithgow St., Philadelphia 33, Pa.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
Dressen-Barnes Corp., 250 N. Vinedo Ave., Pasadena 8, Calif.
Dynatron Radio Ltd., Castle Hill, Maidenhead, Berks., England
Electric Regulator Corp., Norwalk, Conn.
Electronic Measurements Co., Inc., Lewis St. & Maple Ave., Eatontown, N. J.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Electric Co., Technical Products Dept., Electronics Park, Syracuse, N. Y.
General Magnetics, Inc., 133 Bloomfield Ave., Bloomfield, N. J.
General Nuclear Corp., 550 Fifth Ave., New York 26, N. Y.
General Precision Laboratory, Inc., 63 Bedford Rd., Pleasantville, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 49, Mass.
General Radiological Ltd., 15-18 Clipstone St., London, W. 1, England
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Havi-Duty Electric Co., 2040 W. Wisconsin Ave., Milwaukee 1, Wis.
Hunter-Bristol Corp., Bristol, Pa.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
JORDAN ELECTRONICS A DIV. OF THE VICTOREEN INSTRUMENT CO., 3025 W. Mission Rd., Alhambra, Calif. ADV. PG. 188, 189
KEPCO LABORATORIES, INC., 131-38 Sanford Ave., Flushing 55, N. Y. ADV. PG. 41
Keystone Products Co., 904-6 23rd St., Union City, N. J.
Kin Tel (Kay Lab), 5725 Kearny Villa Rd., San Diego 11, Calif.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Lavoie Laboratories, Inc., Matawan-Freehold Rd., Morganville, N. J.
Lawn Electronics Co., E. Freehold Rd., Freehold, N. J.
Leach Corp., Inst Div., 18435 Susana Rd., Long Beach, Calif.
Lee Electric & Mfg. Co., 2806 Clearwater St., Los Angeles 39, Calif.
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, Ohio
Leland Instruments, Ltd., 22-23 Millbank, London, Westminster, S. W. 1, England
Magne-Pulse Corp., 11 Godwin Ave., Fair Lawn, N. J.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Manson Laboratories, Inc., 207 Greenwich Ave., Stamford, Conn.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
N. J. E. Corp., 345 Carnegie Ave., Kenilworth, N. J.
Network Mfg. Corp., 213 W. Fifth St., Bayonne, N. J.
Neutronics Laboratory, Tinley Park, Ill.
North Hills Electric Co., Inc., 402 Sagamore Ave., Mineola, N. Y.
Northeast Scientific Corp., 617 Concord Ave., Cambridge 38, Mass.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
Oregon Electronic Mfg. Co., 2105 S. E. 6th St., Portland, Ore.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
PARSONS CO., RALPH M., ELECTRONICS DIV., 151 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Peerless Instrument Co., Inc., 90-15 Corona Ave., Elmhurst 73, N. Y.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Paschal Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Philbrick Researches, Inc., George A., 230 Congress St., Boston 10, Mass.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Phoenix Precision Instrument Co., 3803-05 N. 5th St., Philadelphia, Pa.
Power Designs, Inc., 89-25 130th St., Richmond Hill 18, N. Y.
Power Sources Inc., Burlington, Mass.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
Radio Development & Research Corp., 100 Pennsylvania Ave., Paterson 3, N. J.
Ransom Research, P. O. Box 382, San Pedro, Calif.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Scientific Electric Corp., 105-119 Monroe St., Garfield, N. J.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.
Sorensen & Co., Inc., Richards Ave., South Norwalk, Conn.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Stromberg-Carlson Div., General Dynamics Corp.,

Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Tallor & Cooper, Inc., 75 Front St., Brooklyn, N. Y.
Technical Operations, Inc., South Ave., Burlington, Mass.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City, 1, N. Y.
Tele-Dynamics, Inc., 5000 Palisade Ave., Philadelphia 3, Pa.
Telotronics Laboratory, Inc., 54 Kinkel St., Westbury, N. Y.
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Tung-Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J.
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Universal Electronics Co., 1720 22nd St., Santa Monica, Calif.
Varo Mfg. Co., Inc., 2201 Walnut St., Garland, Texas
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

PREAMPLIFIERS

See also AMPLIFIERS

Acme Telectronix Div., NEA Service, Inc., W. Third & Lakeside, Cleveland 13, Ohio
Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Aerojet-General Nucleonics, San Ramon, Calif.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
Alden Electronic & Impulse Recording Equipment Co., Westboro, Mass.
Allegany Instrument Co., Inc., Cumberland, Md.
Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill.
American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Atlantic Research Corp., Electromechanical Div., Alexandria, Va.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Bogen Co., David, P. O. Box 500, Paramus, N. J.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Collins Radio Co., Cedar Rapids, Iowa
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Cosmic Radiation Labs., Inc., 247 Blue Point Ave., Blue Point, N. Y.
Daven Co., The, Route 10, Livingston, N. J.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Empire Devices Products Corp., Amsterdam, N. Y.
Engineered Electronics Co., 306 E. First St., Santa Ana, Calif.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
General Electric Co., Technical Products Dept., Electronics Park, Syracuse, N. Y.
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Heath Co., Benton Harbor, Mich.
Industrial Instrument Div., Mandrel Industries, Inc., 5134 Glenmont, Houston, Texas
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotope Developments Ltd., Boonham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Kaarfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12115 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
Keystone Products Co., 904–6 23rd St., Union City, N. J.
Kin Tel (Kay Lab), 5725 Kearny Villa Rd., San Diego 11, Calif.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Lel, Inc., 380 Oak St., Copiague, N. Y.
Litton Industries, Maryland Div., 4910 Calvert Rd., College Park, Md.
Magna-Pulse Corp., 11 Godwin Ave., Fair Lawn, N. J.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Maxson Instruments Corp., Sub. of The W. L. Maxson Corp., 47–37 Austell Place, Long Island City 1, N. Y.
Measurement Engineering, Ltd., Ampnior, Ontario, Canada
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Minneapolis-Honeywell Regulator Co., Boston Div., 1400 Soldiers Field Rd., Boston 35, Mass.
Minneapolis-Honeywell Regulator Co., Ordnance Div., 600 2nd St., Hopkins, Minn.
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PARSONS CO., RALPH M., ELECTRONICS DIV., 151 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
PHILIPS' GLOEILAMPENFABRIEKEN, N V., Eindhoven, Holland. ADV. PG. 56
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
Rauland-Borg Corp., 3515 W. Addison St., Chicago 18, Ill.
Reed Co., Inc., C. W., 5959 S. Hoover St., Los Angeles 44, Calif.
Ramler Co., 2101 Bryant St., San Francisco 10, Calif.
Scott, Inc., H. H., 111 Powdermill Road, Maynard, Mass.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Standard Electronics Div. of Radio Engineering Labs., Inc., 29–01 Borden Ave., Long Island City 1, N. Y.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Technical Measurement Corp., 140–142 State St., New Haven, Conn.
Tektronix, Inc., P. O. Box 831, Portland 7, Ore.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

PRESSES—Pelleting

Allied Engineering & Production Corp., 242 Standing Ave., Alameda, Calif.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Danison Engineering Div., American Brake Shoe Co., 1160 Dublin Rd., Columbus 16, Ohio
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Nash & Thompson Ltd., Oakcroft Rd., Chessington, Surrey, England
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
STOKES CORP., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 132

PROTECTIVE EQUIPMENT

Acme Protection Equipment Co., 1299 Kalamazoo St., South Haven, Mich.
American Optical Co., 28 Mechanic St., Southbridge, Mass.
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.

PSYCHROMETERS

Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foxboro Co., 38 Neponset St., Foxboro, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
General Scientific Equipment Co., 7816 Limekiln Pike, Philadelphia 50, Pa.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Negretti & Zambra, Ltd., 122 Regent St., London, W. 1, England
Powers Regulator Co., 3400 Oakton, Skokie, Ill.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

PULVERIZERS

See MILLS and GRINDERS

PUMPS—Canned-Motor

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
BYRON JACKSON PUMPS, INC., SUB. OF BORG-WARNER CORP., P. O. Box 2017A, Terminal Annex, Los Angeles 54, Calif. ADV. PG. 60C
CHEMPUMP CORP., 1300 E. Mermaid Lane, Philadelphia 18, Pa. ADV. PG. 69
Corley Co., Inc., The, 220 W. 42nd St., New York 36, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Heatron, Inc., 333 Eberts Lane, York, Pa.
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
U. S. PIPE & FOUNDRY CO., Burlington, N. J. ADV. PG. 12, 13
Warren Pumps, Inc., Warren, Mass.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Westinghouse Electric Corp., Atomic Equipment Div., Cheswick, Pa.
WHEELER MFG. CO., C. H., 19th & Lehigh, Philadelphia 32, Pa. ADV. PG. 112

PUMPS—Canned-Rotor

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Buffalo Pumps Div. of Buffalo Forge Co., North Tonawanda, N. Y.
BYRON JACKSON PUMPS, INC., SUB. OF BORG-WARNER CORP., P. O. Box 2017A, Terminal Annex, Los Angeles 54, Calif. ADV. PG. 60C
CHEMPUMP CORP., 1300 E. Mermaid Lane, Philadelphia 18, Pa. ADV. PG. 69
Corley Co., Inc., The, 220 W. 42nd St., New York 36, N. Y.
General Electric Co., Medium AC Motor & Generator Dept., 1 River Rd., Schenectady 5, N. Y.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
U. S. PIPE & FOUNDRY CO., Burlington, N. J. ADV. PG. 12, 13
Warren Pumps, Inc., Warren, Mass.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Westinghouse Electric Corp., Atomic Equipment Div., Cheswick, Pa.

PUMPS—Centrifugal

Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
All-Stainless Inc., 36 Rugg Road, Allston 34, Mass.
Aurora Pump Div., The New York Air Brake Co., 48 Loucks St., Aurora, Ill.
BYRON JACKSON PUMPS, INC., SUB. OF BORG-WARNER CORP., P. O. Box 2017A, Terminal Annex, Los Angeles 54, Calif. ADV. PG. 60C
Buffalo Pumps Div. of Buffalo Forge Co., North Tonawanda, N. Y.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
CHEMPUMP CORP., 1300 E. Mermaid Lane, Philadelphia 18, Pa. ADV. PG. 69
Chicago Pump Co., 624 Diversey Parkway, Chicago 14, Ill.
Corley Co., Inc., The, 220 W. 42nd St., New York 36, N. Y.
Dorr-Oliver, Inc., Barry Place, Stamford, Conn.

Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Duriron Co., Inc., 450 N. Findlay St., Dayton, Ohio
Eastern Industries, Inc., 100 Skiff St., Hamden, Conn.
Eco Engineering Co., 12 New York Ave., Newark 1, N. J.
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Ertel Engineering Corp., Kingston 31, N. Y.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Lawrence Pumps, Inc., 371 Market St., Lawrence, Mass.
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Pacific Pumps, Inc., 5715 Bickett St., Box 151, Huntington Park, Ill.
Peerless Pump Div. of Food Machinery & Chemical Co., 301 West Ave., Los Angeles 31, Calif.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Sethco Mfg. Co., 2284 Babylon Turnpike, Merrick, N. Y.
Sulzer Bros. Ltd., New York, 50 Church St., New York 7, N. Y.
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
Townson & Mercer, Ltd., Croydon, Surrey, England
Union Steam Pump Co., Battle Creek, Mich.
Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.
Warren Pumps, Inc., Warren, Mass.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Westinghouse Electric Corp., Atomic Equipment Div., Cheswick, Pa.
WHEELER MFG. CO., C. H., 19th & Lehigh, Philadelphia 32, Pa. ADV. PG. 112
Whittington Pump & Engineering Corp., 1126 Prospect St., Indianapolis 3, Ind.
Worthington Corp., Harrison, N. J.

PUMPS—Diaphragm

B-I-F Industries, Inc., 530-D Harris Ave., Providence 1, R. I.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Dorr-Oliver, Inc., Barry Place, Stamford, Conn.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Hills McCanna Co., 2395 W. Nelson St., Chicago, Ill.
Kemline-Sanderson Engineering Corp., Holland Ave., Peapack, N. J.
Precision Chemical Pump Corp., 1396 Main St., Waltham, Mass.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Shriver & Co., Inc., T., 864 Hamilton St., Harrison, N. J.
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.
Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.
Warren Pumps, Inc., Warren, Mass.
Worthington Corp., Harrison, N. J.

PUMPS—Electromagnetic

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Electric Co., Medium AC Motor & Generator Dept., 1 River Rd., Schenectady 5, N. Y.
MSH Research Corp., Callery, Pa.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio

PUMPS—Gas-Sealed

Aerojet-General Nucleonics, San Ramon, Calif.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
BYRON JACKSON PUMPS, INC., SUB. OF BORG-WARNER CORP., P. O. Box 2017A, Terminal Annex, Los Angeles 54, Calif. ADV. PG. 60C
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Lawrence Pumps, Inc., 371 Market St., Lawrence, Mass.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
WHEELER MFG. CO., C. H., 19th & Lehigh, Philadelphia 32, Pa. ADV. PG. 112

PUMPS—Liquid Metal

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Buffalo Pumps Div. of Buffalo Forge Co., North Tonawanda, N. Y.
BYRON JACKSON PUMPS, INC., SUB. OF BORG-WARNER CORP., P. O. Box 2017A, Terminal Annex, Los Angeles 54, Calif. ADV. PG. 60C
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Lapp Insulator Co., Inc., 40 Gilbert St., LeRoy, N. Y.
Lawrence Pumps, Inc., 371 Market St., Lawrence, Mass.
MSH Research Corp., Callery, Pa.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
Viking Pump Co., Fourth & State St., Cedar Falls, Iowa
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Westinghouse Electric Corp., Atomic Equipment Dept., Cheswick, Pa.
WHEELER MFG. CO., C. H., 19th & Lehigh, Philadelphia 32, Pa. ADV. PG. 112
Worthington Corp., Harrison, N. J.

PUMPS—Metering

American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
B-I-F Industries, Inc., 530-D Harris Ave., Providence 1, R. I.
Dorr-Oliver, Inc., Barry Place, Stamford, Conn.
Eco Engineering Co., 12 New York Ave., Newark 1, N. J.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Hills McCanna Co., 2395 W. Nelson St., Chicago, Ill.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
Kemline-Sanderson Engineering Corp., Holland Ave., Peapack, N. J.
Kruger Instruments, Harold, P. O. Box 164, San Gabriel, Calif.
Lapp Insulator Co., Inc., 40 Gilbert St., LeRoy, N. Y.
Meditronic Instruments, 4867 Hollywood Blvd., Hollywood 29, Calif.
Philadelphia Pump Div. of American Meter Co., 13500 Philmont Ave., Philadelphia 16, Pa.
Precision Chemical Pump Corp., 1396 Main St., Waltham, Mass.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Roy Co., Milton, 1300 E. Mermaid Lane, Philadelphia 18, Pa.
Sigmamotor, Inc., 500 N. Main St., Middleport, N. Y.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.
Viking Pump Co., Fourth & State St., Cedar Falls, Iowa
Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.

PUMPS—Pack-Sealed

Aurora Pump Div., The New York Air Brake Co., 48 Loucks St., Aurora, Ill.
BYRON JACKSON PUMPS, INC., SUB. OF BORG-WARNER CORP., P. O. Box 2017A, Terminal Annex, Los Angeles 54, Calif. ADV. PG. 60C
Eco Engineering Co., 12 New York Ave., Newark 1, N. J.
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Lapp Insulator Co., Inc., 40 Gilbert St., LeRoy, N. Y.
Lawrence Pumps, Inc., 371 Market St., Lawrence, Mass.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Viking Pump Co., Fourth & State St., Cedar Falls, Iowa
Warren Pumps, Inc., Warren, Mass.
WHEELER MFG. CO., C. H., 19th & Lehigh, Philadelphia 32, Pa. ADV. PG. 112

PUMPS—Vacuum

Abbe Engineering Co., 50 Church St., New York 7, N. Y.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Associated Engineering & Mfg. Corp., Glen Ridge, N. J.
Beach-Russ Co., 50 Church St., New York 7, N. Y.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Consolidated Electrodynamics Corp., Rochester Div., 1775 Mt. Read Blvd., Rochester, N. Y.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Eitel-McCullough, Inc., San Bruno, Calif.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gast Mfg. Corp., 137 Hinkley St., Benton Harbor, Mich.
High Vacuum Equipment Corp., 2 Churchill Rd., Hingham, Mass.
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
International Pump & Machine Works, 81 Doran Ave., Livingston, N. J.
Kinetics Corp., 2 Churchill Rd., Hingham, Mass.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
Kontes Glass Co., Dept. P-159, Vineland, N. J.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Litton Engineering Labs., P. O. Box 949, Grass Valley, Calif.
Mallory-Schwarzkopf Metals Inc., 320 Yonkers Ave., Yonkers, N. Y.
Millipore Filter Corp., 36 Pleasant St., Watertown 72, Mass.
NRC EQUIPMENT CORP., A SUB. OF NATIONAL RESEARCH CORP., 87 Charlemont St., Newton Highlands 61, Mass. ADV. PG. 32
Nash Engineering Co., 450 Wilson Rd., South Norwalk, Conn.
Quincy Compressor Co., Quincy, Ill.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Research Vacuum Supply Co., 6712 N. Clark St., Chicago, Ill.
Resitron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
Schutte & Koerting Co., Cornwells Heights, Bucks, County, Pa.
STOKES CORP., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 132
Union Steam Pump Co., Battle Creek, Mich.
Vacuum Equipment Div. of The New York Air Brake Co., Admiral Wilson Blvd., Camden, N. J.
Vacuum Industrial Applications, Ltd., Netherton Rd., Wishaw Lanarkshire, Scotland
Vacuum Specialties Co., Inc., 34 Linden St., Somerville, Mass.
Veeco Vacuum Corp., 86 Denton Ave., New Hyde Park, N. Y.
Warren Pumps, Inc., Warren, Mass.
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
Whittington Pump & Engineering Corp., 1126 Prospect St., Indianapolis 3, Ind.
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.
Worthington Corp., Harrison, N. J.

PURIFIERS—Water

See WATER CONDITIONERS

PYROMETERS

Aero Research Instruments Co., 315 N. Aberdeen St., Chicago 7, Ill.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Barnes Engineering Co., 30 Commerce Rd., Stamford, Conn.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Instrument Co., Inc., 3529 Grand Central Terminal, New York 17, N. Y.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London S. E. 13, England
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Farnsworth Electronics Co., Div. of IT&T, Fort Wayne, Ind.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Illinois Testing Labs., 420 N. LaSalle St., Chicago, Ill.
J-B-T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
Negretti & Zambra, Ltd., 122 Regent St., London, W. 1, England
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.

Technique Associates, Inc., 211 E. South St., Indianapolis, Ind.
Thermo-Electric Co., Inc., Rochelle Park Post Office, Saddle Brook, N. J.
Therma Electric Mfg. Co., 465 Huff, Dubuque, Iowa
West Instrument Corp., 4363 W. Montrose Ave., Chicago 41, Ill.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

QUARTZ—Fused

Amersil Co., Inc., 685 Ramsey Ave., Hillside, N. J.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Fish-Schurman Corp., 75 Portman Rd., New Rochelle N. Y.
General Electric Co., Nela Park, Cleveland 12, Ohio
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Quartz Products Corp., 688 Somerse St., Plainfield, N. J.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Rositron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
Thermal American Fused Quartz Co., Inc., 18–20 Salem St., Dover, N. J.
Tinsley Laboratories, Inc., 2526 Grove St., Berkeley 4, Calif.

RABBITS

See PNEUMATIC DISPATCH SYSTEMS

RADIATION PROCESSING EQUIPMENT

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Allied Engineering & Production Corp., 242 Standing Ave., Alameda, Calif.
APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Daystrom, Inc., Daystrom, Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Electronized Chemicals Corp., 846 Lefferts Ave., Brooklyn 3, N. Y.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
HIGH VOLTAGE ENGINEERING CORP., S. Bedford St., Burlington, Mass. ADV. PG. 170, 171
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
KELLEY & CO., O. O., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Engineering, Ltd., Greenwich Metal Works, London, S. E. 7, England
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas

RADIOACTIVE WASTE DISPOSAL

See SERVICES

RADIOACTIVITY STANDARDS

Abbott Laboratories, North Chicago, Ill.
Aerojet-General Nucleonics, San Ramon, Calif.
American Electronics, Inc., 665 W. Washington Blvd., Los Angeles 15, Calif.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
Davtron Engineering, 1 Winslow St., Redwood City, Calif.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif.
Merck & Co., Ltd., 560 De Courcelle St., Montreal 3, P. Q., Canada
Nems-Clarke, Inc., 919 Jesup-Blair Drive, Silver Spring, Md.
NEW ENGLAND NUCLEAR CORP., 575 Albany St., Boston 18, Mass. ADV. PG. 214
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Consultants, Inc., 9842 Manchester Rd., St. Louis 19, Mo.
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
U. S. RADIUM CORP., Morristown, N. J. ADV. PG. 163
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.

RADIOGRAPHIC EQUIPMENT—Gamma Ray

ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
E. R. D. Engineering Co., Ltd., Ipswich Rd., Slough, Buckinghamshire, England
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Falk & Co., Ltd., M., Emefco House, Bell St., Reigate (Surrey), England
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
Isotope Products (Instrument Div.) Inc., Buffalo, N. Y.
Isotope Products Ltd., Davis Rd., Oakville Ontario, Canada
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Nucleodyne Corp. Sub. of Cook Electric Co., 8100 N. Monticello Ave., Skokie, Ill.
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
Rositron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Solus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
Technical Operations, Inc., South Ave., Burlington, Mass.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.

RADIOGRAPHIC EQUIPMENT—X-Ray

APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
HIGH VOLTAGE ENGINEERING CORP., S. Bedford St., Burlington, Mass. ADV. PG. 170, 171
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Philips Electronics Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N V., Eindhoven, Holland. ADV. PG. 56
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
Rositron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Solus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Westinghouse Electric Corp., X-Ray Div., 2519 Wilkens Ave., Baltimore 3, Md.
X-Ray Department of General Electric Co., 4855 Electric Ave., Milwaukee 1, Wis.

RADIOISOTOPES

See ISOTOPES—Radioactive

RARE EARTHS & THEIR COMPOUNDS

Europium

Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Baker & Adamson Products, General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
DAVISON CHEMICAL CO., Box 488, Pompton Plains, N. J. ADV. PG. 172
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
GOWS CHEMICAL CO., INC., THE, P. O. Box 443, Laramie, Wy. ADV. PG. 208
HEAVY MINERALS CO., 4000 N. Hawthorne St., Chattanooga, Tenn. ADV. PG. 146
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
LINDSAY CHEMICAL CO., 272 Ann St., West Chicago, Ill. ADV. PG. 40
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.
MICHIGAN CHEMICAL CORP., RARE EARTH & THORUM DIV., St. Louis, Mich. ADV. PG. 136
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Research Chemicals, Inc., Box 431, Burbank, Calif.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.

Gadolinium

Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Baker & Adamson Products, General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
DAVISON CHEMICAL CO., Box 488, Pompton Plains, N. J. ADV. PG. 172
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
GOWS CHEMICAL CO., INC., THE, P. O. Box 443, Laramie, Wy. ADV. PG. 208
HEAVY MINERALS CO., 4000 N. Hawthorne St., Chattanooga, Tenn. ADV. PG. 146
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
LINDSAY CHEMICAL CO., 272 Ann St., West Chicago, Ill. ADV. PG. 40
MICHIGAN CHEMICAL CORP., RARE EARTH & THORUM DIV., St. Louis, Mich. ADV. PG. 136
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Research Chemicals, Inc., Box 431, Burbank, Calif.

St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Lanthanum

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Baker & Adamson Products, General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
DAVISON CHEMICAL CO., Box 488, Pompton Plains, N. J. ADV. PG. 172
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fine Chemical Co., 250 W. 57th St., New York 19, N. Y.
GOWS CHEMICAL CO., INC., THE, P. O. Box 443, Laramie, Wy. ADV. PG. 208
HEAVY MINERALS CO., 4000 N. Hawthorne St., Chattanooga, Tenn. ADV. PG. 146
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
LINDSAY CHEMICAL CO., 272 Ann St., West Chicago, Ill. ADV. PG. 40
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Maywood Chemical Works, 111 W. Hunter Ave., Maywood, N. J.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.
MICHIGAN CHEMICAL CORP., RARE EARTH & THORUN DIV., St. Louis, Mich. ADV. PG. 136
New Process Metals, 45-65 Manufacturers Place, Newark 5, N. J.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Research Chemicals, Inc., Box 431, Burbank, Calif.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Misch

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fine Chemical Co., Inc., 250 W. 57th St., New York 19, N. Y.
GOWS CHEMICAL CO., INC., THE, P. O. Box 443, Laramie, Wy. ADV. PG. 208
HEAVY MINERALS CO., 4000 N. Hawthorne St., Chattanooga, Tenn. ADV. PG. 146
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
LINDSAY CHEMICAL CO., 272 Ann St., West Chicago, Ill. ADV. PG. 40
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.
New Process Metals, 45-65 Manufacturers Place, Newark 5, N. J.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Praseodymium

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Baker & Adamson Products, General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
DAVISON CHEMICAL CO., Box 488, Pompton Plains, N. J. ADV. PG. 172
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fine Chemical Co., Inc., 250 W. 57th St., New York 19, N. Y.
GOWS CHEMICAL CO., INC., THE, P. O. Box 443, Laramie, Wy. ADV. PG. 208
HEAVY MINERALS CO., 4000 N. Hawthorne St., Chattanooga, Tenn. ADV. PG. 146
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
LINDSAY CHEMICAL CO., 272 Ann St., West Chicago, Ill. ADV. PG. 40
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Maywood Chemical Works, 111 W. Hunter Ave., Maywood, N. J.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.
MICHIGAN CHEMICAL CORP., RARE EARTH & THORUN DIV., St. Louis, Mich. ADV. PG. 136
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Research Chemicals, Inc., Box 431, Burbank, Calif.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

Samarium

Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Baker & Adamson Products, General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
DAVISON CHEMICAL CO., Box 488, Pompton Plains, N. J. ADV. PG. 172
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fine Chemical Co., Inc., 250 W. 57th St., New York 19, N. Y.
GOWS CHEMICAL CO., INC., THE, P. O. Box 443, Laramie, Wy. ADV. PG. 208
HEAVY MINERALS CO., 4000 N. Hawthorne St., Chattanooga, Tenn. ADV. PG. 146
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Jonas Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
LINDSAY CHEMICAL CO., 272 Ann St., West Chicago, Ill. ADV. PG. 40
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.
MICHIGAN CHEMICAL CORP., RARE EARTH & THORUN DIV., St. Louis, Mich. ADV. PG. 136
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Research Chemicals, Inc., Box 431, Burbank, Calif.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.

REACTOR CONTROL RODS

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Regulator Corp., 165 Broadway, New York 6, N. Y.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
Sintercast Corp. of America, 134 Woodworth Ave., Yonkers, N. Y.
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

REACTOR CONTROLS

See CONTROLS, GAGES, METERS

REACTOR ECONOMICS CONSULTING

See SERVICES

REACTOR FUELS

See FUEL ELEMENTS—Nuclear

REACTOR HAZARD EVALUATION

See SERVICES

REACTOR PRESSURE VESSELS

See POWER PLANT EQUIPMENT VESSELS—Pressure

REACTORS—Nuclear

1. Experimental
2. Materials Testing
3. Power
4. Research
5. Training

ACF INDUSTRIES, INC., NUCLEAR PRODUCTS-ERCO DIV., 508 Kennedy St., N. W., Washington 11, D. C. ADV. PG. 44A-44D 1, 2, 3, 4.
AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55 1, 2, 3, 4.
Aerojet-General Nucleonics, San Ramon, Calif. 1, 2, 4.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115 1, 3, 4.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis. 1, 2, 3, 4.
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif. 1, 2, 3, 4, 5.
ATOMICS INTERNATIONAL, A DIV. OF NORTH AMERICAN AVIATION, INC., Box 309, Canoga Park, Calif. ADV. PG. 128, 134, 193 1, 3, 4.
Avco Mfg. Corp., Research & Advanced Development Div., 20 S. Union St., Lawrence, Mass. 4.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48 1, 2, 3, 4.
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43 1, 2, 3, 4.
Combustion Engineering, Inc., 200 Madison Ave., New York 16, N. Y. 3.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J. 3.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas 1, 2, 4.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill. 1, 2, 4.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J. 1, 2, 4, 5.
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y. 3, 4.
GENERAL ATOMIC DIV. OF GENERAL DYNAMICS CORP., P. O. Box 608, San Diego 12, Calif. ADV. PG. 111 1, 3, 4.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165 1, 2, 3, 4.
General Nuclear Engineering Corp., P. O. Box 245, Dunedin, Fla. 1, 2, 3, 4.
KAISER ENGINEERS, ATOMIC ENERGY DIV. OF HENRY J. KAISER CO., Oakland 12, Calif. ADV. PG. 11 1, 2, 3, 4.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53 1, 2, 3, 4.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 8 New St., White Plains, N. Y. ADV. PG. 16 1, 2, 3, 4.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England 4.
Nucledyne Corp., Sub. of Cook Electric Co., 8100 N. Monticello Ave., Skokie, Ill. 1, 2, 4.

RECORDERS

See also CONTROLS; GAGES; METERS

RECORDERS—Graphic

Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
Alden Systems Co., Alden Research Center, Westboro, Mass.
Alfax Paper & Engineering Co., P. O. Box 125, Westboro, Mass.
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Automatic Timing & Controls, Inc., King of Prussia, Pa.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 408
Bristol Co., P. O. Box 1790 NBO, Waterbury 20, Conn.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Daimo Victor Co., 1515 Industrial Way, Belmont, Calif.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo 1, Ohio
Electric Tachometer Corp., 68th & Upland Sts., Philadelphia 42, Pa.
Electronic Associates, Inc., Long Branch, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Epic, 154 Nassau St., New York 38, N. Y.
Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis 6, Ind.
Fielden Electronics Ltd., Paston Rd., Whytenshawe, Manchester, England

Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FORJO SCIENTIFIC CO., THE, 633 Lincoln St., Evanston, Ill. ADV. PG. 178
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Hagan Laboratories, Inc., 155 Perry St., New York 14, N. Y.
Hughes Products, Los Angeles 45, Calif.
Industrial Instrument Div., Mandrel Industries, Inc., 5134 Glenmont, Houston, Texas
LITTON INDUSTRIES, ELECTRONIC EQUIPMENTS DIV., 336 N. Foothill Rd., Beverly Hills, Calif. ADV. PG. 67
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Moseley Co., F. L., 409 N. Fair Oaks Ave., Pasadena, Calif.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
Offner Electronics Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.
Partlow Corp., The, Dept. NBG–58, New Hartford, N. Y.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
Sanborn Co., Industrial Div., 175 Wyman St., Waltham 54, Mass.
Sound Apparatus Co., Stirling, N. J.
Sunvic Controls Ltd., 10 St., Strand, London, W. C. 2, England
Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio
Taller & Cooper, Inc., 75 Front St., Brooklyn, N. Y.
Texas Instruments Incorporated, 6000 Lemmon Ave., Dallas 9, Texas
U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.
Westronics, Inc., 3605 McCart, Fort Worth, Texas

RECORDERS—High-Speed Digital

Aldon Electronic & Impulse Recording Equipment Co., Westboro, Mass.
Alfax Paper & Engineering Co., P. O. Box 125, Westboro, Mass.
Anatron Div., Endevco Corp., 161 E. California, Pasadena, Calif.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Computer-Measurements Corp., 5528 Vineland Ave., North Hollywood, Calif.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Davies Laboratories, Inc., Div. of Minneapolis-Honeywell, 10721 Hanna St., Beltsville, Md.
Daytron Engineering, 1 Winslow St., Redwood City, Calif.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
FRANKLIN ELECTRONICS, INC., E. Fourth St., Bridgeport, Pa. ADV. PG. 162
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Hogan Laboratories, Inc., 155 Perry St., New York 14, N. Y.
LITTON INDUSTRIES, ELECTRONIC EQUIPMENTS DIV., 336 N. Foothill Rd., Beverly Hills, Calif. ADV. PG. 67
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Pantron Corp., 777 S. Tripp, Chicago 24, Ill.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
Radiation, Inc., P. O. Box 37, Melbourne, Fla.
Sound Apparatus Co., Stirling, N. J.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Taller & Cooper, Inc., 75 Front St., Brooklyn, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Victor Adding Machine Co., 3900 N. Rockwell St., Chicago 18, Ill.

RECORDERS—Humidity & Temperature

MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Sardax, Inc., 12 Bowdoin Square, Boston 14, Mass.
Taylor Instrument Companies 95 Ames St., Rochester, N. Y.

RECORDERS—Line

Aldon Electronic & Impulse Recording Equipment Co., Westboro, Mass.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
HAYS CORP., Michigan City 39, Ind. ADV. PG. 183
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Offner Electronics Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Taller & Cooper, Inc., 75 Front St., Brooklyn, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.

RECORDERS—Multichannel

Aldon Systems Co., Aldon Research Center, Westboro, Mass.
Alfax Paper & Engineering Co., P. O. Box 125, Westboro, Mass.
Allegany Instrument Co., Inc., Cumberland, Md.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Century Electronics & Instruments, Inc., P. O. Box 6216, Tulsa 17, Okla.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Davies Laboratories, Inc., Div. of Minneapolis-Honeywell, 10721 Hanna St., Beltsville, Md.
Edin Co., Inc., 207 Main St., Worcester, Mass.
Electro Medical Lab., Inc., South Woodstock, Vt.
Electromation Co., 1646 18th St., Santa Monica, Calif.
Electronic Associates, Inc., Long Branch, N. J.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E., 13, England
Epic, 154 Nassau St., New York 38, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
General Precision Laboratory, Inc., 63 Bedford Rd., Pleasantville, N. Y.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hathaway Instrument Div., Hamilton Watch Co., 5800 E. Jewell, Denver, Colo.
Holland Div. of Minneapolis-Honeywell Regulator Co., 5200 E. Evans Ave., Denver 22, Colo.
Hogan Laboratories, Inc., 155 Perry St., New York 14, N. Y.
Hughes Products, Los Angeles 45, Calif.
International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
Magne-Pulse Corp., 11 Godwin Ave., Fair Lawn, N. J.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Nash & Thompson Ltd., Oakcroft Rd., Chessington, Surrey, England
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
Offner Electronics Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Sanborn Co., Industrial Div., 175 Wyman St., Waltham 54, Mass.
Sound Apparatus Co., Stirling, N. J.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Westronics, Inc., 3605 McCart, Fort Worth, Texas

RECORDERS—Nuclear Radiation

See COUNTERS; SCALERS, etc.

RECORDERS—Potentiometer

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brüel & Kjaer, Naerum, Denmark
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Electronic Associates, Inc., Long Branch, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Epic, 154 Nassau St., New York 38, N. Y.
Falk & Co., Ltd., M., Emefco House, Bell St., Reigate (Surrey), England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gordon Co., Cloud S., 3000 S. Wallace St., Chicago 16, Ill.
HAYS CORP., Michigan City 39, Ind. ADV. PG. 183
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
Partlow Corp., The, Dept. NBG–58, New Hartford, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Potter Aeronautical Corp., Route 22, Union, N. J.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thermo-Electric Co., Inc., Rochelle Park Post Office, Saddle Brook, N. J.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.
West Instrument Corp., 4363 W. Montrose Ave., Chicago 41, Ill.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Westronics, Inc., 3605 McCart, Fort Worth, Texas
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

RECORDERS—Telemetering

Aldon Electronic & Impulse Recording Equipment Co., Westboro, Mass.
Ampex Corp., 934 Charter St., Redwood City, Calif.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
B-I-F Industries, Inc., 530–D Harris Ave., Providence 1, R. I.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Century Electronics & Instruments, Inc., P. O. Box 6216, Tulsa 17, Okla.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hogan Laboratories, Inc., 155 Perry St., New York 14, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Offner Electronics Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.

Pentron Corp., 777 S. Tripp, Chicago 24, Ill.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Radiation, Inc., P. O. Box 37, Melbourne, Fla.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Taller & Cooper, Inc., 75 Front St., Brooklyn, N. Y.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Texas Instruments Incorporated, 6000 Lemmon Ave., Dallas 9, Texas
Westronics, Inc., 3605 McCart, Fort Worth, Texas

RECTIFIERS—Electronic

See POWER SUPPLIES

RECTIFIERS—Metallic

See also DIODES

Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bradley Laboratories, Inc., 168 Columbus Ave., New Haven 10, Conn.
Fansteel Metallurgical Corp., North Chicago, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Electric Co., Semiconductor Products Dept., Electronics Park, Syracuse, N. Y.
General Nuclear Corp., 550 Fifth Ave., New York 26, N. Y.
International Rectifier Corp., 1521 E. Grand Ave., El Segundo, Calif.
International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.
International Telephone & Telegraph Corp., Components Div., Semi-Conductor Div., 100 Kingsland Rd., Clifton, N. J.
International Telephone & Telegraph Corp., Industrial Products Div., 15191 Bledsoe St., San Fernando, Calif.
Leach Corp., Inet Div., 18435 Susana Rd., Long Beach, Calif.
Lee Electric & Mfg. Co., 2806 Clearwater St., Los Angeles 39, Calif.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Model Rectifier Corp., 1065 Utica Ave., Brooklyn 3, N. Y.
Moloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Pyramid Electric Co., 1445 Hudson Blvd., North Bergen, N. J.
Radio Development & Research Corp., 100 Pennsylvania Ave., Paterson 3, N. J.
Radio Receptor Co., Inc., 240 Wythe Ave., Brooklyn 11, N. Y.
Rapid Electric Co., 2881 Middletown Rd., New York, N. Y.
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Sanford Miller Co., 691 Sedford Ave., Brooklyn 6, N. Y.
Sarkes Tarzian, Inc., 415 N. College Ave., Bloomington, Ind.
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
Syntron Co., 355 Lexington, Homer City, Pa.
Thor Electric & Machine Works, 15 S. Jefferson St., Chicago 6, Ill.
Transitron Electronics Corp., 168 Albion St., Wakefield, Mass.
Tung-Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

REFERENCE SOURCES & STANDARDS

See RADIOACTIVITY STANDARDS

REFRACTORIES

Acme Brick Co., P. O. Box 425, Fort Worth 1, Texas
Aerojet-General Nucleonics, San Ramon, Calif.
AMERICAN LAVA CORP., STEATITE DIV., Manufacturers Rd., Chattanooga 5, Tenn. ADV. PG. 52
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
Basic, Inc., 845 Hanna Bldg., Room 845, Cleveland 14, Ohio
Carborundum Co., Refractories Div., Keasbey, N. J.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Du-Co Ceramics Co., Box 587, Butler 8, Pa.
Eagle-Picher Co., Cincinnati, Ohio
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
FRENCHTOWN PORCELAIN CO., Frenchtown, N. J. ADV. PG. 144
General Ceramics Corp., 250 Crows Mill Rd., Keasbey, N. J.
Great Lakes Carbon Corp., 18 E. 48th St., New York, N. Y.
Harbison-Walker Refractories Co., Farmers Bank Bldg., Pittsburgh 22, Pa.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Kennametal, Inc., Latrobe, Pa.
Louthan Mfg. Co., East Liverpool, Ohio
Morganite, Inc., 33-02 48th Ave., Long Island City 1, N. Y.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
NORTON CO., 1 New Bond St., Worcester 6, Mass. ADV. PG. 37
Robinson Clay Products Co., The, 65 W. State St., Akron 9, Ohio
Sauereisen Cements Co., Sauereisen Bldg., Pittsburgh 15, Pa.
Saxonburg Ceramics, Saxonburg, Pa.
Thermal Refractories Corp., 4501 Dell Ave., North Bergen, N. J.
Ver-Lac-Old Chemical Co., 116 Broad St., New York 4, N. Y.
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169

REFRIGERATION EQUIPMENT

Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Doyle & Roth Mfg. Co., Inc., 136-50 24th St., Brooklyn 32, N. Y.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
Rempe Co., 334 N. Sacramento Blvd., Chicago 12, Ill.
Sherer-Gillett Co., Marshall, Mich.
Sulzer Bros. Ltd., New York, 50 Church St., New York 7, N. Y.
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
Tenney Engineering, Inc., 1090 Springfield Rd., Union, N. J.
Townson & Mercer, Ltd., Croydon, Surrey, England
United Aircraft Products, Inc., 1116 Balander, Dayton, Ohio
York Corp., York, Pa.

REGISTERS—Electromechanical

See COUNTERS—Electromechanical

REGULATORS—Fluid

Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Brooks Rotameter Co., Box 432, Lansdale, Pa.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Cash Valve Mfg. Corp., A. W., 666 E. Wabash Ave., Decatur, Ill.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
HOKE, INC., 233 S. Dean St., Englewood, N. J. ADV. PG. 200
Kay & MacDonald, Inc., 11-15 Central Ave., West Orange, N. J.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Mason-Neilan, Habatan St., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Potter Aeronautical Corp., Route 22, Union, N. J.
Powers Regulator Co., 3400 Oakton, Skokie, Ill.
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Watts Regulator Co., 10 Embankment St., Lawrence, Mass.

REGULATORS—Voltage

Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Arnold Magnetics Corp., 5962 Smiley Drive, Culver City, Calif.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Electric Machinery Mfg. Co., 800 Central Ave., Minneapolis 13, Minn.
Electric Regulator Corp., Norwalk, Conn.
Electronic Measurements Co., Inc., Lewis St. & Maple Ave., Eatontown, N. J.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Magnetics, Inc., 135 Bloomfield Ave., Bloomfield, N. J.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Goslin Electric & Mfg. Co., 2921 W. Olive St., Burbank, Calif.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Interelectronics Corp., 3432 Grand Concourse, New York 58, N. Y.
KEPCO LABORATORIES, INC., 131-38 Sanford Ave., Flushing 55, N. Y. ADV. PG. 41
Keystone Products Co., 904-6 23rd St., Union City, N. J.
Leach Corp., Inet Div., 18435 Susana Rd., Long Beach, Calif.
Lee Electric & Mfg. Co., 2806 Clearwater St., Los Angeles 39, Calif.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
Radio Development & Research Corp., 100 Pennsylvania Ave., Paterson 3, N. J.
Raytheon Mfg. Co., Commercial Equipment Div., 100 River St., Waltham, Mass.
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.
Sorensen & Co., Inc., Richards Ave., South Norwalk, Conn.
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Superior Electric Co., 83 Laurel St., Bristol, Conn.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Tel-Instrument Electronics Corp., 728 Garden St., Carlstadt, N. J.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
United Transformer Corp., 150 Varick St., New York 13, N. Y.
Varo Mfg. Co., Inc., 2201 Walnut St., Garland, Texas
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.

RELAYS

1. Electronic
2. Magnetic
3. Sensitive
4. Time Delay

Abrams Instrument Corp., 600-620 E. Shiawassee St., Lansing, Mich. 4.
Ace Electronics Associates, Inc., 99 Dover St., Somerville 44, Mass. 1, 3, 3.
Adams & Westlake Co., Michigan St., Elkhart, Ind. 4.
Adler Electronics, Inc., 1 La Fevre Lane, New Rochelle, N. Y. 1, 3.
Advanced Products Co., 59 Broadway, North Haven, Conn. 4.
Airpax Products Co., Middle River, Baltimore 20, Md. 2, 4.
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis. 1, 2, 4.
Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y. 1, 2, 3, 4.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md. 1, 3.
Amperite Co., Inc., 561 Broadway, New York 12, N. Y. 4.

Assembly Products, Inc., Chesterland 6, Ohio 2, 3.
Autocell Co., Shelby, Ohio 3, 4.
Automatic Electric Sales Corp., 1033 Van Buren St., Chicago 7, Ill. 2.
Automatic Switch Co., Hanover Rd., Florham Park, N. J. 1, 2, 3, 4.
Automatic Timing & Controls, Inc., King of Prussia, Pa. 1, 3, 4.
B/W Controller Corp., 2200 E. Maple Rd., Birmingham, Mich. 1, 2.
Babcock Relays, Inc., 1640 Monrovia Ave., Costa Mesa, Calif. 1, 2, 3.
Barber-Colman Co., Electrical & Small Motors Div., Rockford, Ill. 2, 3.
Berkshire Laboratories, 588 Bank Village, Greenville, N. H. 1.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa. 3.
Blender-Tongue Laboratories, Inc., 9-25 Alling St., Newark 2, N. J. 4.
Branson Corp., Jefferson Rd., Whippany, N. J. 2, 4.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn. 1, 3.
Caltron Products Co., 1310-12 S. Hobart Blvd., Los Angeles 6, Calif.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio 1, 2, 4.
Comar Electric Co., 3349 W. Addison St., Chicago 18, Ill. 1, 2, 3, 4.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill. 2, 3, 4.
Couch Ordnance, Inc., Relay Div., 3 Arlington St., North Quincy 71, Mass. 2.
Cramer Controls Corp., Box 83, Centerbrook, Conn. 4.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137 4.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis. 1, 2, 3, 4.
Eagle Signal Corp., 202 20th St., Moline, Ill. 1, 4.
Ebert Electronics Corp., 212-26 Jamaica Ave., Queens Village 28, N. Y. 1, 2, 3, 4.
Edison Industries, Thomas A., Instrument Div., West Orange, N. J. 2, 3, 4.
Electro-Physics Co., 287-L Broadway, New York 7, N. Y. 1.
Electronic Control Corp., 1573 E. Forest St., Detroit 7, Mich. 1, 4.
Elgin National Watch Co., Electronics Div., 2435 N. Naomi St., Burbank, Calif. 1, 3, 4.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England 2, 3.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England 1, 2, 3.
Farmer Electric Products Co., Inc., 2300 Washington St., Newton Lower Falls, Mass. 1.
Fieldon Electronics Ltd., Paston Rd., Whytenshawe, Manchester, England 1.
G-V Controls, Inc., 28 Hollywood Plaza, East Orange, N. J. 4.
General Automatic Corp., 12 Carlton Ave., Mountain View, N. J. 1, 2, 3, 4.
General Controls Co., 801 Allen Ave., Glendale Ave., Glendale 1, Calif. 2.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165 1, 2, 3, 4.
Gibbs Mfg. Co., N. Main St., Janesville, Wis. 4.
Guardian Electric Co., 1625 W. Walnut St., Chicago 12, Ill. 1, 2, 3, 4.
Haledy Electronics Co., 87 William St., New York 5, N. Y. 1.
Haydon Co., A. W., The, 232 N. Elm St., Waterbury, Conn. 1, 2, 4.
Haydon Mfg. Co., 245 E. Elm St., Torrington, Conn. 4.
Hi-G, Inc., Bradley Field, Windsor Locks, Conn. 2.
Hughes Products, Los Angeles 45, Calif. 1.
Instrument Center, 55-G, Reade St., New York 7, N. Y. 1.
Iron Fireman Mfg. Co., Electronics Div., 2838 Southeast Ninth Ave., Portland 2, Ore. 3.
Jennings Radio Mfg. Corp., 970 McLaughlin Ave., P. O. Box 1278, San Jose 12, Calif. 2.
KEITHLEY INSTRUMENTS, INC., Dept. NB, 12415 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126 1.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill. 2, 3, 4.
Keystone Products Co., 904-6 23rd St., Union City, N. J. 2.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England 1.
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill. 1.
Laconia Div. of Potter & Brumfield, Inc., 54 Mill St., Laconia, N. H. 1, 2, 3.
LaPine & Co., Arthur S., 6001 S. Knox Ave., Chicago 29, Ill. 1.
Leach Corp., Leach Relay Div., 5915 Avalon Blvd., Los Angeles 3, Calif. 1, 2, 3, 4.
Leland, Inc., O. H., 123 Webster, Dayton 2, Ohio 2.
Manning, Maxwell & Moore, Inc., Stratford, Conn. 1.
Marion Electrical Instrument Co., Greiner Field, Manchester, N. H. 3.
Measurement Engineering, Ltd., Amprior, Ontario, Canada 1, 3, 4.
Metals & Controls Corp., Spencer Thermostat Div., 40 Forest St., Attleboro, Mass. 4.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover 1, 2.
Ohmite Mfg. Co., 3601 Howard St., Skokie, Ill. 2, 3, 4.
Parisier & Co., Maurice I., 741-745 Washington St., New York 14, N. Y.
Partlow Corp., The, Dept. NBG-58, New Hartford, N. Y. 4.
Paschal Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Phaostron Instrument & Electronic Co., 151 Pasadena Ave., South Pasadena, Calif. 2, 3.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56 1, 2, 4.
Phillips Control Corp., 89 W. Washington St., Joliet, Ill. 1, 2, 4.
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y. 1, 4.
Pollak Corp., Joseph, 81 Freeport St., Boston 22, Mass. 1, 2.
Potter & Brumfield, Inc., Princeton, Ind. 1, 2, 3.
Price Electric Corp., Frederick, Md. 1, 2, 3, 4.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif. 1.
Radio Corporation of America, Engineering Products Div., Camden, N. J. 2.
Revere Corp. of America, Wallingford, Conn. 3.
Sigma Instruments, Inc., 180 Pearl St., South Braintree, Boston 85, Mass. 2, 3, 4.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill. 3, 4.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio 4.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y. 2.
Struthers-Dunn, Inc., Lambs Rd., Pitman, N. J. 1, 2, 3, 4.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England 1, 4.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y. 1, 2, 3, 4.
Terado Co., 1068 Raymond Ave., St. Paul 14, Minn. 3.
Terwico Electronics, Inc., 1090 Morris Ave., Union, N. J. 3, 4.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140 1.
Tung-Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J. 3, 4.
Ulanet Co., George, 413 Market St., Newark 5, N. J. 4.
Varo Mfg. Co., Inc., 2201 Walnut St., Garland, Texas 1.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167 4.
Victory Engineering Corp., 77 Springfield Rd., Union, N. J. 1.
Walkirt Co., The, 141 W. Hazel St., Inglewood 3, Calif. 1.
Ward Leonard Electric Co., 621 South St., Mt. Vernon, N. Y. 2, 3.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich. 1, 4.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169 2, 4.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J. 1, 3.
Wheaton Co., T. C., Millville, N. J.
Wheelock Signals, Inc., 273 Branchport Ave., Long Branch, N. J. 2, 3.
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill. 1.
Wilson & Co., G. C., 1915 Eighth Ave., Huntington, W. Va. 4.

REMOTE HANDLING DEVICES

See MANIPULATORS—Remote and TONGS—Handling

RESINS—Ion Exchange

Chemical Process Co., Redwood City, Calif.
Chem-Pure Service Co., 762 Industrial Rd., San Carlos, Calif.
Dow Chemical Co., Midland, Mich.
ELGIN SOFTENER CORP., 179 S. Grove Ave., Elgin, Ill. ADV. PG. 110
Graver Water Conditioner Co., 216 W. 14th St., New York 11, N. Y.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Illinois Water Treatment Co., 858 Cedar St., Rockford, Ill.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
National Aluminate Corp., 6216 W. 66th Place, Chicago 38, Ill.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Permutit Co., 50 W. 44th St., New York 36, N. Y.
Rohm & Haas Co., Washington Square, Philadelphia 5, Pa.
Trionics Corp., P. O. Box 548, Madison 1, Wis.

RESISTORS

NOTE: Various types of resistors are not indicated in this listing. Contact manufacturer for specific type(s) desired.

Ace Electronics Associates, Inc., 99 Dover St., Somerville 44, Mass.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Allies Products Corp., P. O. Box 188, Kenadell Station, Miami, Fla.
Ambery Corp., 21320 Stephenson, Hazel Park, Mich.
Arnhold Ceramics, Inc., 1 E. 57th St., New York 22, N. Y.
Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio
Bond Electronics Corp., 60 Springfield Ave., Springfield, N. J.
Carborundum Co., Globar Div., Hyde Park Blvd., Niagara Falls, N. Y.
Centralab Division of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Cinema Engineering Co., Div. of Aerovox Corp., 1100 Chestnut St., Burbank, Calif.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Clarostat Mfg. Co., Inc., Dover, New Hampshire
Computer Instruments Corp., 92 Madison Ave., Hempstead, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Curtiss-Wright Corp., Components Sales, 631 Central Ave., Carlstadt, N. J.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Dale Products, Inc., Columbus, Neb.
Daven Co., The, Route 10, Livingston, N. J.
DeWitt Development Co., 3008 W. 127th St., Blue Island, Ill.
Electro-Measurements, Inc., 7524 S. W. Macadam Ave., Portland 1, Ore.
Empire Devices Products Corp., Amsterdam, N. Y.
Erie Resistor Corp., 644 W. 12th St., Erie, Pa.
Fairchild Controls Corp., Components Div., 225 Park Ave., Hicksville, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Hardwick Hindle, Inc., 40 Hermon St., Newark 5, N. J.
Hycor Div. of International Resistance Co., 12790 Bradley Ave., Sylmar, Calif.
Instrument Resistors Co., 1036 Commerce Ave., Union, N. J.
International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.
K-F Development Co., 2606 Spring St., Redwood City, Calif.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England 1.
Lectrohm, Inc., 5561 Northwest Highway, Chicago 30, Ill.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Mepco Inc., 35-37 Abbett Ave., Morristown, N. J.
Minneapolis-Honeywell Regulator Co., Rubicon Instruments Ridge Ave. at 35th St., Philadelphia 32, Pa.
Muirhead & Co., Ltd., Beckenham, Kent, England
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Ohmite Mfg. Co., 3601 Howard St., Skokie, Ill.
Phaostron Instrument & Electronic Co., 151 Pasadena Ave., South Pasadena, Calif.
PHILIPS' GLOEILAMPENFABRIEKEN, N V., Eindhoven, Holland. ADV. PG. 56
PHYSICS RESEARCH LABORATORIES, P. O. Box 855, Hempstead, N. Y. ADV. PG. 199
Precision Inc., 730 Lyndale Ave., N., Minneapolis, Minn.
Pyrofilm Resistor Co., U. S. Highway 46, Parsippany, N. J.
Rean Resistor Corp., 117 Stanley Ave., Yonkers, N. Y.
Resistance Products Co., 914 S. 13th St., Harrisburg, Pa.
Shallcross Mfg., 10 Jackson Ave., Collingdale, Pa.
Speer Carbon Co., St. Marys, Pa.
Sprague Electric Co., North Adams, Mass.
Stackpole Carbon Co., St. Marys, Pa.
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Texas Instruments Incorporated, 6000 Lemmon Ave., Dallas 9, Texas
Transformers, Inc., 200 Stage Rd., Vestal, N. Y.
Tru-Ohm Products Div., Model Engineering & Mfg., Inc., 2800 Milwaukee Ave., Chicago 18, Ill.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Ward Leonard Electric Co., 621 South St., Mt. Vernon, N. Y.
White Dental Mfg. Co., S. S., 10 East 40th St., New York 16, N. Y.
Winslow Co., Inc., 9 Liberty St., Newark 2, N. J.
Wirt Co., 5221 Greene St., Philadelphia 44, Pa.

RHEOSTATS & POTENTIOMETERS

Ace Electronics Associates, Inc., 99 Dover St., Somerville 44, Mass.
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Borg Equipment Div., The George W. Borg Corp., 120 S. Main St., Janesville, Wis.
Bourns Laboratories, Inc., 6135 Magnolia Blvd., Riverside, Calif.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Circuit Instruments, Inc., 1927 First Ave., S., St. Petersburg, Fla.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Clarostat Mfg. Co., Inc., Dover, New Hampshire
Computer Instruments Corp., 92 Madison Ave., Hempstead, N. Y.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Daven Co., The, Route 10, Livingston, N. J.
DeJur-Amsco Corp., 45–01 Northern Blvd., Long Island City 1, N. Y.
Edcliff Instruments Inc., 1711 S. Mountain Ave., Monrovia, Calif.
Electro-Measurements, Inc., 7524 S. W. Macadam Ave., Portland 1, Ore.
Fairchild Controls Corp., Components Div., 225 Park Ave., Hicksville, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Hardwick, Hindle, Inc., 40 Herman St., Newark 5, N. J.
Hellpot Corp., Newport Beach, Calif.
International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.
K-F Development Co., 2606 Spring St., Redwood City, Calif.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Markite Corp., 155 Waverly Place, New York 14, N. Y.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Ohmite Mfg. Co., 3601 Howard St., Skokie, Ill.
PHILIPS' GLOEILAMPENFABRIEKEN, N V., Eindhoven, Holland. ADV. PG. 56
PHYSICS RESEARCH LABORATORIES, P. O. Box 555, Hempstead, N. Y. ADV. PG. 199
Stackpole Carbon Co., St. Marys, Pa.
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Tru-Ohm Products Div., Model Engineering & Mfg., Inc., 2800 Milwaukee Ave., Chicago 18, Ill.
Ward Leonard Electric Co., 691 South St., Mt. Vernon, N. Y.
Waters Manufacturing, Inc., Boston Post Rd., Wayland, Mass.
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Winslow Co., Inc., 9 Liberty St., Newark 2, N. J.
Wirt Co., 5221 Greene St., Philadelphia 32, Pa.

RINGS—Absorption, Fractionating

CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Metallic Gasket Co., 13 Bethany St., New Brunswick, N. J.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio

RINGS—"O"

Advanced Products Co., 59 Broadway, North Haven, Conn.
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Auburn Mfg. Co., The, 500 Stack St., Middletown, Conn.
Automatic & Precision Mfg. Co., 252 Hawthorne Ave., Yonkers 5, N. Y.
Bacon Industries, Inc., 192 Pleasant St., Watertown, Mass.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Chicago Gasket Co., 1271 W. North Ave., Chicago 22, Ill.
Connecticut Hard Rubber Co., New Haven 9, Conn.
CRANE PACKING CO., 6400 Oakton St., Morton Grove, Ill. ADV. PG. 117
Emerson Plastics Corp., 1383 Seabury Ave., Bronx 61, N. Y.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Garlock Packing Co., The, Palmyra, N. Y.
Micromold Corp., 1 School St., Yonkers, N. Y.
Otis Gasket & Rubber Co., Andrew, 231–33 W. Court St., Cincinnati 2, Ohio
Resistoflex Corp., Roseland, N. J.
Roberts Tolede Rubber Co., 1200 Prospect & M. C. R. R., Toledo 6, Ohio
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif
Sparta Mfg. Co., Div. of U. S. Ceramic Tile Co., Dover, Ohio
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
Stillman Rubber Co., 5811 Marilyn Ave., Culver City, Calif.
United Aircraft Products, Inc., 1116 Belander, Dayton, Ohio
U. S. Gasket Co., 600 N. 10th St., Camden 1, N. J.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vacuum Industrial Applications, Ltd., Netherton Rd., Wishaw, Lanarkshire, Scotland
Weatherhead Co., The, 128 W. Washington Blvd., Fort Wayne, Ind.

ROLLING MILLS

Abbe Engineering Co., 50 Church St., New York 7, N. Y.
Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
Penn Manufacturing Co., The, 200 Penn Rd., Newington, Conn.
Stanat Mfg. Co., Inc., 571 Shames Drive, Westbury, N. Y.
Waterbury Farrel Foundry & Machine Co., 453 Bank St., Waterbury 20, Conn.

SAFES—Radioisotope

See also CONTAINERS—Shielded

AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
E. R. D. Engineering Co., Ltd., Ipswich Rd., Slough, Buckinghamshire, England
Edlow Lead Co., 729 Bank St., Columbus 16, Ohio
Falk & Co., Ltd., M., Emofco House, Bell St., Reigate (Surrey), England
Isotope Accessories Co., Box 9534, Philadelphia 39, Pa.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
National Lead Co., 111 Broadway, New York 6, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Engineering, Ltd., Greenwich Metal Works, London, S. E. 7, England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Nuclear Research Applications, Ltd., "Emofco" House, Bell St., Reigate (Surrey), England
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.

SALES REPRESENTATIVES

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ATOMIC ASSOCIATES, INC., 139–21 85th Drive, Jamaica 35, N. Y. (OFFICES: Atlanta, Boston, Dallas, Los Angeles, Philadelphia, Pittsburgh, San Francisco). ADV. PG. 215
PACKARD INSTRUMENT CO., INC., P. O. Box 428, La Grange, Ill. ADV. PG. 213

SAMPLE HOLDERS & CHANGERS

See also PLANCHETS

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bruel & Kjaer, Naerum, Denmark
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Harper Engineering Co., 2330 Michigan Ave., Santa Monica, Calif.
Isotope Accessories Co., Box 9534, Philadelphia 39, Pa.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
Labgear (Cambridge), Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Engineering, Ltd., Greenwich Metal Works, London, S. E. 7, England
Nuclear Research Applications, Ltd., "Emofco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PHILIPS' GLOEILAMPENFABRIEKEN, N V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

SAMPLING—Air

See SERVICES

SAMPLING SYSTEMS—Air

Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
Atomation, Inc., 5959 S. Hoover St., Los Angeles 44, Calif.
ATOMIC ACCESSORIES INC., 244–04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Millipore Filter Corp., 36 Pleasant St., Watertown 72, Mass.
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
Nems-Clarke, Inc., 919 Jesup-Blair Drive, Silver Spring, Md.
NUCLEAR-ELECTRONICS CORP., 2633–36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
STAPLEX CO., THE, AIR SAMPLER DIV., 775 Fifth Ave., Brooklyn 32, N. Y. ADV. PG. 184
Texas Nuclear Corp., Box 9267, Allendale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Westinghouse Electric Corp., X-Ray Div., 2519 Wilkens Ave., Baltimore 3, Md.

SAMPLING—Water

See SERVICES

SCALERS—Battery Operated

ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Dynatron Radio Ltd., Castle Hill, Maidenhead, Berks., England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 8 Aerial Way, Syosset, N. Y.
Isotope Developments Ltd., Beenham Grange Aldermaston Wharf, nr. Reading, Berks, England
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Research Applications, Ltd., "Emofco" House, Bell St., Reigate (Surrey), England

SCALERS—Binary

See also COUNTERS

Aerojet-General Nucleonics, San Ramon, Calif.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.

BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Dextron Engineering, 1 Winslow St., Redwood City, Calif.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
Electrical & Physical Instrument Corp., 42-19 27th St., Long Island City 1, N. Y.
Electronic Engineering Co. of California, 1601 E. Chestnut St., Santa Ana, Calif.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Engineered Electronics Co., 506 E. First St., Santa Ana, Calif.
Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Exact Weight Scale Co., 538 E. Town St., Dept. A, Columbus 15, Ohio
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
General Electric Co., Technical Products Dept., Electronics Park, Syracuse, N. Y.
General Nuclear Co., 4957 Hollywood Blvd., Hollywood 27, Calif.
HAMNER ELECTRONICS CO., Box 831, Princeton, N. J. ADV. PG. Second Cover
Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda, Md.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 15, Mass.
Magnetics Research Co., 255 Grove St., White Plains, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Meditronic Instruments, 4867 Fountain Ave., Hollywood 29, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
Navigation Computer Corp., 1621 Snyder Ave., Philadelphia 45, Pa.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PARSONS CO., RALPH M., ELECTRONICS DIV., 151 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
SCIENTIFIC ENGINEERING LABORATORY, 2229 McGee Ave., Berkeley, Calif. ADV. PG. 198
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 195
Technical Measurement Corp., 140-142 State St., New Haven, Conn.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Walkirt Co., The, 141 W. Hazel St., Inglewood 3, Calif.

SCALERS—Decade

See also COUNTERS

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34-01 30th St., Long Island City 6, N. Y. ADV. PG. 181
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bruel & Kjaer, Naerum, Denmark
Burroughs Corp., Electronic Tube Div., P. O. Box 1226, Plainfield, N. J.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Computer-Measurements Corp., 5528 Vineland Ave., North Hollywood, Calif.
Cosmic Radiation Labs., Inc., 247 Blue Point Ave., Blue Point, N. Y.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Dextron Engineering, 1 Winslow St., Redwood City, Calif.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
Dynatron Radio Ltd., Castle Hill, Maidenhead, Berks., England
Electrical & Physical Instrument Corp., 42-19 27th St., Long Island City 1, N. Y.
Electronic Engineering Co. of California, 1601 E. Chestnut St., Santa Ana, Calif.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Engineered Electronics Co., 506 E. First St., Santa Ana, Calif.
Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
FRANKLIN ELECTRONICS, INC., E. Fourth St., Bridgeport, Pa. ADV. PG. 162
General Nuclear Co., 4957 Hollywood Blvd., Hollywood 27, Calif.
General Radiological Ltd., 15-18 Clipstone St., London, W. 1, England
HAMNER ELECTRONICS CO., Box 831, Princeton, N. J. ADV. PG. Second Cover
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Isotope Developments Ltd., Boenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Magnetics Research Co., 255 Grove St., White Plains, N. Y.
Measurement Engineering Ltd., Arnprior, Ontario, Canada
Meditronic Instruments, 4867 Fountain Ave., Hollywood 29, Calif.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
Navigation Computer Corp., 1621 Snyder Ave., Philadelphia 45, Pa.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR-ELECTRONICS CORP., 2632-36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PHILIPS' GLOEILAMPENFABRIEKEN, N V., Eindhoven, Holland. ADV. PG. 56
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Salus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 195
Technical Measurement Corp., 140-142 State St., New Haven, Conn.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
Walkirt Co., The, 141 W. Hazel St., Inglewood 3, Calif.

SCALES

See BALANCES

SCANNERS—Isotope-Distribution

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
Atomation, Inc., 5959 S. Hoover St., Los Angeles 44, Calif.
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
Isotope Accessories Co., Box 9334, Philadelphia 39, Pa.
Isotope Development Ltd., Boenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Technical Measurement Corp., 140-142 State St., New Haven, Conn.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50

SCINTILLATION COUNTERS

See COUNTERS—Scintillation

SCINTILLATORS—Crystal

Aerojet-General Nucleonics, San Ramon, Calif.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34-01 30th St., Long Island City 6, N. Y. ADV. PG. 181
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Berkeley Crystal Co., 1740 University Ave., Berkeley 3, Calif.
CRYSTALS INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 194
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
E. R. D. Engineering Co., Ltd., Ipswich Rd., Slough, Buckinghamshire, England
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Filo Color & Chemical Co., 347 Madison Ave., New York 17, N. Y.
HARSHAW CHEMICAL CO., THE, 1945 E. 97th St., Cleveland 6, Ohio. ADV. PG. 28
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Isomet Corp., 118 Union St., Palisades Park, N. J.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Jones Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
LEVINTHAL ELECTRONIC PRODUCTS, INC., Stanford Industrial Park, Palo Alto, Calif. ADV. PG. 190
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
Nash & Thompson, Ltd., Oakcroft Road, Chessington, Surrey, England
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Nuclear Research Applications, Ltd., "Emefco" House, Bell St. Reigate (Surrey) England
Precision Radiation Instruments, Inc., 4223 W. Jefferson Blvd., Los Angeles 16, Calif.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
SINGLE CRYSTAL CORP. OF AMERICA, RD1, Saxonburg Blvd., Saxonburg, Pa. ADV. PG. 175
Technical Measurement Corp., 140-142 State St., New Haven, Conn.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Var-Loc-Oid Chemical Co., 116 Broad St., New York 4, N. Y.

SCINTILLATORS—Liquid

Aerojet-General Nucleonics, San Ramon, Calif.
AMERICAN TRADAIR CORP., SUB. OF EKCO ELECTRONICS, LTD., 34-01 30th St., Long Island City 6, N. Y. ADV. PG. 181
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
E. R. D. Engineering Co., Ltd., Ipswich Rd., Slough, Buckinghamshire, England
Isomet Corp., 118 Union St., Palisades Park, N. J.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Nash & Thompson, Ltd., Oakcroft Road, Chessington, Surrey, England
NUCLEAR ENTERPRISES, LTD., 1750 Pembina Highway, Winnipeg, Canada. ADV. PG. 114
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
PILOT CHEMICALS, INC., 36 Pleasant St., Watertown 72, Mass. ADV. PG. 187
RADIATION COUNTER LABS., INC., 5122 W. Grove St. Skokie, Ill. ADV. PG. 29
Radiological Research Institute Inc., 663 Lipan St., Denver, Colo.

SINGLE CRYSTAL CORP. OF AMERICA, RD1, Saxonburg Blvd., Saxonburg, Pa. ADV. PG. 175
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50

SCINTILLATORS—Plastic

Aerojet-General Nucleonics, San Ramon, Calif.
ALLIED RESEARCH ASSOCIATES, INC., 43 Leon St., Boston 15, Mass. ADV. PG. 192
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
CRYSTALS INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 194
Dajac Laboratories, The Borden Co., Chemical Div., Leominster, Mass.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fite Color & Chemical Co., 347 Madison Ave., New York 17, N. Y.
Isomet Corp., 118 Union St., Palisades Park, N. J.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Nash & Thompson, Ltd., Oakcroft Road, Chessington, Surrey, England
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
NUCLEAR ENTERPRISES, LTD., 1750 Pembina Highway, Winnepeg, Canada. ADV. PG. 114
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
PILOT CHEMICALS, INC., 36 Pleasant St., Watertown 72, Mass. ADV. PG. 187
Radiation Industries Co., P. O. Box 232, Brookhaven, N. Y.
SINGLE CRYSTAL CORP. OF AMERICA, RD1, Saxonburg Blvd., Saxonburg, Pa. ADV. PG. 175
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50

SCREENS—X-Ray

AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
Bracke-Seib X-Ray Co., Inc., 16 Pelham Bay Park, W., Pelham Manor, N. Y.
CRYSTALS INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 194
DU PONT DE NEMOURS & CO., INC., E. I., Wilton 98, Del. ADV. PG. 10
General Lead Construction Corp., 1800 Harrison Ave., Kearny, N. J.
Isomet Corp., 118 Union St., Palisades Park, N. J.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Mellon Inc., George T., 132 Nassau St., New York 38, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
U. S. RADIUM CORP., Morristown, N. J. ADV. PG. 163
Universal X-Ray Corp., 1140 N. Western Ave., Chicago 22, Ill.
Warren Corp., The, 2901 Brighton Rd., Pittsburgh 12, Pa.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

SCRUBBERS—Gas

See also AIR CLEANERS

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Anderson Co., V. D., Purifier Div., 1935 W. 96th St., Cleveland 2, Ohio
Darr-Oliver, Inc., Barry Place, Stamford, Conn.
GRAVER TANK & MFG. CO., INC., 4809 Tod Ave., East Chicago, Ind. ADV. PG. 127
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Monsanto Chemical Co., Plastics Div., 600 Monsanto Ave., Springfield 2, Mass.
NARDA ULTRASONICS CORP., THE, Sub. of The Narda Microwave Corp., 158 Herricks Rd., Mineola, N. Y. ADV. PG. 121
PACIFIC COAST ENGINEERING CO., Oak & Clement Sts., Alameda, Calif. ADV. PG. 116
Pittsburgh Des Moines Steel Co., Pittsburgh 25, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Yerzley & Co., 744 Broad St., Newark 2, N. J.

SEALS—Mechanical

Advanced Products Co., 59 Broadway, North Haven, Conn.
AMERICAN LAVA CORP., STEATITE DIV., Manufacturers Rd., Chattanooga 5, Tenn. ADV. PG. 52
Automatic & Precision Mfg. Co., 252 Hawthorne Ave., Yonkers 5, N. Y.
Belfab Corp., 11 Ramah Circle, Agawam, Mass.
Bristol Co., P. O. Box 1790 HBG, Waterbury 20, Conn.
BYRON JACKSON PUMPS, INC., SUB. OF BORG-WARNER CORP., P. O. Box 2017A, Terminal Annex, Los Angeles 54, Calif. ADV. PG. 60C
Chicago-Allis Mfg. Corp., 103 N. Green St., Chicago 7, Ill.
CLEVELAND HARD FACING, 3047 Stillson Ave., Cleveland 5, Ohio. ADV. PG. 202
Connecticut Hard Rubber Co., New Haven 9, Conn.
CRANE PACKING CO., 6400 Oakton St., Morton Grove, Ill. ADV. PG. 117
Durametallic Corp., Factory St., Kalamazoo, Mich.
Felt Products Mfg. Co., 7450 N. McCormick Blvd., P. O. Box 8409, Chicago 80, Ill.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Garlo Mfg. Co., 588 Eddy St., Providence 4, R. I.
Garlock Packing Co., The, Palmyra, N. Y.
General Radiological Ltd., 15-18 Clipstone St., London, W. 1, England
Kennametal, Inc., Latrobe, Pa.
Magnetic Seal Corp., Sewams Rd., Barrington, R. I.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Radio Frequency Labs., Inc., Boonton 2, N. J.
Raytheon Mfg. Co., Ceramic Sales, Foundry Ave., Waltham, Mass.
Resistoflex Corp., Roseland, N. J.
Sealol Corp., Warwick Industrial Park, Providence 5, R. I.
Speer Carbon Co., St. Marys, Pa.
Syntron Co., 355 Lexington, Homer City, Pa.
United Aircraft Products, Inc., 1116 Bolander, Dayton, Ohio
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio

SERVICES

Analysis-Activation

Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
Aerojet-General Nucleonics, San Ramon, Calif.
American Nuclear Science Corp., 61 Broadway, New York 6, N. Y.
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston Ill. ADV. PG. 178
Harper Engineering Co., 2330 Michigan Ave., Santa Monica, Calif.
Industrial Nuclear Radiation Consultants, Box 647, New Haven 3, Conn.
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Snell, Inc., Foster D., 29 W. 15th St., New York 11, N. Y.
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50

Analysis—Beryllium

Aerojet-General Nucleonics, San Ramon, Calif.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Avco Mfg. Corp., Research & Advanced Development Div., 20 S. Union St., Lawrence, Mass.
Bios Laboratories, Inc., 17 W. 60th St., New York 23, N. Y.
Brush Beryllium Co., 4301 Perkins Ave., Cleveland 3, Ohio
Green & Co., Inc., Arnold, 122 Hampshire St., Cambridge, Mass.
Industrial Hygiene Associates, 123 Wiswall Rd., Newton Centre 59, Mass.
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Ledoux & Co., 359 Alfred Ave., Teaneck, N. J.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
NUCLEAR METALS, INC., 224 Albany St., Cambridge 39, Mass. ADV. PG. 154
Sintercast Corp. of America, 134 Woodworth Ave., Yonkers, N. Y.
Snell, Inc., Foster D., 29 W. 15th St., New York 11, N. Y.
U. S. Testing Co., Inc., 1415 Park Ave., Hoboken, N. J.

Analysis—Spectrographic

ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Bios Laboratories, Inc., 17 W. 60th St., New York 23, N. Y.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
ISOTOPES, INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 148
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Ledoux & Co., 359 Alfred Ave., Teaneck, N. J.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
NUCLEAR METALS, INC., 224 Albany St., Cambridge 39, Mass. ADV. PG. 154
Orlando Research, Inc., P. O. Box 6491, Orlando, Fla.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Snell, Inc., Foster D., 29 W. 15th St., New York 11, N. Y.
U. S. Testing Co., Inc., 1415 Park Ave., Hoboken, N. J.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.

Analysis—Uranium & Radioisotope

Aerojet-General Nucleonics, San Ramon, Calif.
American Nuclear Science Corp., 61 Broadway, New York 6, N. Y.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Bios Laboratories, Inc., 17 W. 60th St., New York 23, N. Y.
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Industrial Nuclear Radiation Consultants, Box 647, New Haven 3, Conn.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
ISOTOPES, INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 148
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Ledoux & Co., 359 Alfred Ave., Teaneck, N. J.
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
NEW ENGLAND NUCLEAR CORP., 575 Albany St., Boston, Mass. ADV. PG. 214
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Orlando Research, Inc., P. O. Box 6491, Orlando, Fla.
Radiation Applications Inc., 342 Madison Ave., New York 17, N. Y.
RADIATION DETECTION CO., INC., 576 College Ave., Palo Alto, Calif. ADV. PG. 208
RADIOCHEMISTRY, INC., 1146 S. Lewis Ave., Tulsa, Okla. ADV. PG. 196
Snell, Inc., Foster D., 29 W. 15th St., New York 11, N. Y.
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
Texas Research Foundation, Renner, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
U. S. Testing Co., Inc., 1415 Park Ave., Hoboken, N. J.

Computer Services

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Applied Research Corp., 135 S. La Salle St., Chicago, Ill.
Avco Mfg. Corp., Research & Advanced Development Div., 20 S. Union St., Lawrence, Mass.
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Belock Instrument Corp., 111-01 14th Ave., College Point, N. Y.
Computer Control Co., Inc., 92 Broad St., Wellesley, Mass.
Computer Usage Co., Inc., 18 E. 41st St., New York 17, N. Y.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cubic Corp., 5575 Kearny Villa Rd., San Diego 11, Calif.
Dion Laboratories, Inc., 611 Broadway, New York 12, N. Y.
Electronic Associates, Inc., Long Branch, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England

Farnsworth Electronics Co., Div. of IT&T, Fort Wayne, Ind.
GENERAL ATOMIC DIV. OF GENERAL DYNAMICS CORP., P. O. Box 608, San Diego 12, Calif. ADV. PG. 111
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
International Business Machines Corp., 724 Fifth Ave., New York, N. Y.
Internuclear Co., 7 N. Brentwood Blvd., Clayton 5, Mo.
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 150
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
Philbrick Researches, Inc., George A., 230 Congress St., Boston 10, Mass.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
Ransom Research, P. O. Box 382, San Pedro, Calif.
Remington Rand Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Tammen and Denison, Inc., 650 S. Clark St., NB, Chicago 5, Ill.
Technical Research Group, Inc., 17 Union Square, W., New York 3, N. Y.
Westinghouse Electric Corp., Industry Engineering Dept., East Pittsburgh, Pa.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

Consulting and Engineering Services —Radiation

Adkins & Merrill, Sudbury, Mass.
Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
Aerojet-General Nucleonics, San Ramon, Calif.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
ALLIED RESEARCH ASSOCIATES, INC., 43 Leon St., Boston 15, Mass. ADV. PG. 192
AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
American Nuclear Science Corp., 61 Broadway, New York 6, N. Y.
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Applied Research Corp., 135 S. La Salle St., Chicago, Ill.
ASTRA, INC., P. O. Box 163, Milford, Conn. ADV. PG. 198
Atnu Engineering Co., 173 W. Madison St., Chicago 2, Ill.
Atomation, Inc., 5959 S. Hoover St., Los Angeles 44, Calif.
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Beva Laboratory, 32 Parker Ave., P. O. Box 478, Trenton 3, N. J.
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Computer Usage Co., Inc., 18 E. 41st St., New York 17, N. Y.
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Eastern Technical Associates, 38 Main St., Hastings-on-Hudson, N. Y.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Electronized Chemicals Corp., 846 Lafferts Ave., Brooklyn 3, N. Y.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ferguson Co., Inc., H. K. 11th at Walnut, Cleveland 14, Ohio
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gibbs & Hill, Inc., Pennsylvania Station, New York 1, N. Y.
Gulton Industries, Durham Ave., Metuchen, N. J.
HEALTH PHYSICS SERVICE, INC., 1111 Law St., Baltimore 2, Md. ADV. PG. 194
HIGH VOLTAGE ENGINEERING CORP., S. Bedford St., Burlington, Mass. ADV. PG. 170, 171
Industrial Hygiene Associates, 123 Wiswall Rd., Newton Centre 59, Mass.
Industrial Nuclear Radiation Consultants, Box 647, New Haven 3, Conn.
Industrial X-Ray & Research Inc., 880 Second St., Muskegon, Mich.
Internuclear Co., 7 N. Brentwood Blvd., Clayton 5, Mo.
Isomet Corp., 118 Union St., Palisades Park, N. J.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Isotope Products, Ltd., Davis Rd., Oakville, Ontario, Canada
ISOTOPES, INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 148
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
KAISER ENGINEERS, ATOMIC ENERGY DIV. OF HENRY J. KAISER CO., Oakland 12, Calif. ADV. PG. 11
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
LANDAUER JR. & CO., R. S., 24 Plaza, Park Forest, Ill. ADV. PG. 168
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
LITTON INDUSTRIES, ELECTRONIC EQUIPMENTS DIV., 336 N. Foothill Rd., Beverly Hills, Calif. ADV. PG. 67
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Menlo Research Laboratory, 538 Phelan Ave., San Jose, Calif.
Neugroschl Associates, Seth, 230 Riverside Drive, New York 25, N. Y.
Neutronics Research Co., 165 Lake St., Waltham, Mass.
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Consultants, Inc., 9842 Manchester Rd., St. Louis 19, Mo.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
Nuclear Engineering, Ltd., Greenwich Metal Works, London, S. E. 7, England
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Nucleodyne Corp., Sub. of Cook Electric Co., 8100 N. Monticello Ave., Skokie, Ill.
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Nucor Research, Inc., 2421 Walcott, Ferndale, Mich.
Orlando Research, Inc., P. O. Box 6491, Orlando, Fla.
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
PHYSICS RESEARCH LABORATORIES, P. O. Box 555, Hempstead, N. Y. ADV. PG. 199
Pickard-Warren-Lowe Associates, 1518 "K" St., N. W., Washington, D. C.
Quantum, Inc., Lutbery Ave., Wallingford, Conn.
RCA Service Co., Inc., Government Service Dept., Cherry Hill, Camden 8, N. J.
Radiation Applications Inc., 342 Madison Ave., New York 17, N. Y.
RADIATION DETECTION CO., INC., 576 College Ave., Palo Alto, Calif. ADV. PG. 208
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
RADIOCHEMISTRY, INC., 1146 S. Lewis Ave., Tulsa, Okla. ADV. PG. 196
RAY-PROOF CORP., 643 Canal St., Stamford, Conn. ADV. PG. 216
Rosenberg Associates, Paul, 100 Stevens Ave., Mt. Vernon, N. Y.
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill.
Snell, Inc., Foster D., 29 W. 15th St., New York 11, N. Y.
Stone & Webster Engineering Corp., 90 Broad St., New York 5, N. Y.
Sunvic Controls Ltd., 10 St., Strand, London, W. C. 2, England
Technical Research Group, Inc., 17 Union Square, W., New York 3, N. Y.
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
Trionics Corp., P. O. Box 548, Madison 1, Wis.
U. S. RADIUM CORP., Morristown, N. J. ADV. PG. 163
VITRO CORP. OF AMERICA, 261 Madison Ave., New York 16, N. Y. ADV. PG. 147
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

Consulting and Engineering Services —Reactor

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Adkins & Merrill, Sudbury, Mass.
Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
Aerojet-General Nucleonics, San Ramon, Calif.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
Applied Research Corp., 135 S. La Salle St., Chicago, Ill.
Arde Associates, 75 Austin St., Newark 2, N. J.
Artisen Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
ASTRA, INC., P. O. Box 163, Milford, Conn. ADV. PG. 198
Atnu Engineering Co., 173 W. Madison St., Chicago 2, Ill.
Atomation, Inc., 5959 S. Hoover St., Los Angeles 44, Calif.
Badger Mfg. Co., 230 Bent St., Cambridge 41, Mass.
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
Blodgett & Calley, Inc., 16 Court St., Boston, Mass.
Computer Usage Co., Inc., 18 E. 41st St., New York 17, N. Y.
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Ebasco Services Inc., 2 Rector St., New York 6, N. Y.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Electronic Associates, Inc., Long Branch, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Ferguson Co., Inc., H. K., 11th at Walnut, Cleveland 14, Ohio
GENERAL ATOMIC DIV. OF GENERAL DYNAMICS CORP., P. O. Box 608, San Diego 12, Calif. ADV. PG. 111
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Nuclear Engineering Corp., P. O. Box 245, Dunedin, Fla.
General Radiological Ltd., 15-18 Clipstone St., London, W. 1, England
Gibbs & Hill, Inc., Pennsylvania Station, New York 1, N. Y.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Harper Engineering Co., 2330 Michigan Ave., Santa Monica, Calif.
Internuclear Co., 7 N. Brentwood Blvd., Clayton 5, Mo.
Isomet Corp., 118 Union St., Palisades Park, N. J.
KAISER ENGINEERS, ATOMIC ENERGY DIV. OF HENRY J. KAISER CO., Oakland 12, Calif. ADV. PG. 11
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 150
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
MARVEL-SCHEBLER PRODUCTS DIV. OF BORG-WARNER CORP., Decatur, Ill. ADV. PG. 60D
Menlo Research Laboratory, 538 Phelan Ave., San Jose, Calif.
Neugroschl Associates, Seth, 230 Riverside Drive, New York 25, N. Y.
Norden Ketay Corp., Commerce Rd., Stamford, Conn.

NUCLEAR AND ALLIED PRODUCTS — SERVICES

NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
Nucledyne Corp. Sub. of Cook Electric Co., 8100 N. Monticello Ave., Skokie, Ill.
Omega Engineering Co., 70 E. 45th St., New York 17, N. Y.
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
Peerless Instrument Co., Inc., 90–15 Corona Ave., Elmhurst 73, N. Y.
Penn-Texas Corp., Nuclear Engineering Div., 730 Fifth Ave., New York, N. Y.
Pickard-Warren-Lowe Associates, 1518 "K" St., N. W., Washington D. C.
PIONEER SERVICE & ENGINEERING CO., 231 S. LaSalle St., Chicago 4, Ill. ADV. PG. 72
Quantum, Inc., Lutbury Ave., Wallingford, Conn.
RCA Service Co., Inc., Government Service Dept., Cherry Hill, Camden 8, N. J.
Rosenberg Associates, Paul, 100 Stevens Ave., Mt. Vernon, N. Y.
Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill.
Stone & Webster Engineering Corp., 90 Broad St., New York 5, N. Y.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Technical Research Group, Inc., 17 Union Square, W., New York 3, N. Y.
Thomas & Associates, Inc., Ralph D., 1200 Metropolitan Bldg., Minneapolis, Minn.
Trionics Corp., P. O. Box 548, Madison 1, Wis.
VITRO CORP. OF AMERICA, 261 Madison Ave., New York 16, N. Y. ADV. PG. 147

Consulting Services—Reactor Economics

American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.

Criticality Hazard Evaluation

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
ASTRA, INC., P. O. Box 163, Milford, Conn. ADV. PG. 198
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Pa.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
General Nuclear Engineering Corp., P. O. Box 245, Dunedin, Fla.
Internuclear Co., 7 N. Brentwood Blvd., Clayton 5, Mo.
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
Nordon Kotay Corp., Commerce Rd., Stamford, Conn.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Nucledyne Corp., Sub. of Cook Electric Co., 8100 N. Monticello Ave., Skokie, Ill.
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Snell, Inc., Foster D., 29 W. 15th St., New York 11, N. Y.
Technical Research Group, Inc., 17 Union Square, W., New York 3, N. Y.
VITRO CORP. OF AMERICA, 261 Madison Ave., New York 16, N. Y. ADV. PG. 147

Decontamination

Aerojet-General Nucleonics, San Ramon, Calif.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
Atnu Engineering Co., 173 W. Madison St., Chicago 2, Ill.
ATOMIC ENERGY WASTE DISPOSAL SERVICE, 5410 Bond St., Oakland 1, Calif. ADV. PG. 204
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Industrial Nuclear Radiation Consultants, Box 647, New Haven 3, Conn.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
NARDA ULTRASONICS CORP., THE, Sub. of the Narda Microwave Corp., 158 Herricks Rd., Mineola, N. Y. ADV. PG. 121
Nordon Kotay Corp., Commerce Rd., Stamford, Conn.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Consultants, Inc., 9842 Manchester Rd., St. Louis 19, Mo.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
Preco Chemical Corp., Allen Blvd., Farmingdale, N. Y.
RCA Service Co., Inc., Government Service Dept., Cherry Hill, Camden 8, N. J.
Technical Research Group, Inc., 17 Union Square, W., New York 3, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trionics Corp., P. O. Box 548, Madison 1, Wis.
TURCO PRODUCTS, INC., 6135 S. Central Ave., Los Angeles 1, Calif. ADV. PG. 161

Engineering & Construction

Austin Co., The, 16112 Euclid Ave., Cleveland 12, Ohio
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
Burns & Roe, Inc., 160 West Broadway, New York 13, N. Y.
Catalytic Construction Co., 1528 Walnut St., Philadelphia 2, Pa.
Custodis Construction Co., Inc., 137 Chambers St., New York 7, N. Y.
Ferguson Co., Inc., H. K., 11th at Walnut, Cleveland 14, Ohio
KAISER ENGINEERS, ATOMIC ENERGY DIV. OF HENRY J. KAISER CO., Oakland 12, Calif. ADV. PG. 11
Stone & Webster Engineering Corp., 90 Broad St., New York 5, N. Y.
White Engineering Corp., J. G., 80 Broad St., New York 4, N. Y.

Film Badge Services

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass.
HEALTH PHYSICS SERVICE, INC., 1111 Lew St., Baltimore 2, Md. ADV. PG. 194
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
LANDAUER, JR. & CO., R. S., 24 Plaza, Park Forest, Ill. ADV. PG. 168
Nordon Kotay Corp., Commerce Rd., Stamford, Conn.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR SERVICE LABORATORY, 4020 Buffat Rd., N.E., Knoxville 14, Tenn. ADV. PG. 208
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
RADIATION DETECTION CO., INC., 576 College Ave., Palo Alto, Calif. ADV. PG. 208
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 193
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 130
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

Health Physics Design & Procedures

Aerojet-General Nucleonics, San Ramon, Calif.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
ASTRA, INC., P. O. Box 163, Milford, Conn. ADV. PG. 198
Atnu Engineering Co., 173 W. Madison St., Chicago 2, Ill.
ATOMIC ENERGY WASTE DISPOSAL SERVICE, 5410 Bond St., Oakland 1, Calif. ADV. PG. 204
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Pa.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Electronized Chemicals Corp., 846 Lafferts Ave., Brooklyn 3, N. Y.
FORBO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
HEALTH PHYSICS SERVICE, INC., 1111 Law St., Baltimore 2, Md. ADV. PG. 194
Industrial Hygiene Associates, 123 Wiswall Rd., Newton Centre 59, Mass.
Industrial Nuclear Radiation Consultants, Box 647, New Haven 3, Conn.
Industrial X-Ray & Research, Inc., 880 Second St., Muskegon, Mich.
ISOTOPES, INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 148
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
LANDAUER, JR. & CO., R. S., 24 Plaza, Park Forest, Ill. ADV. PG. 168
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
Nordon Kotay Corp., Commerce Rd., Stamford, Conn.
Nuclear Consultants, Inc., 9842 Manchester Rd., St. Louis 19, Mo.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
RCA Service Co., Inc., Government Service Dept., Cherry Hill, Camden 8, N. J.
Radiation Applications Inc., 342 Madison Ave., New York 17, N. Y.
RADIATION DETECTION CO., INC., 576 College Ave., Palo Alto, Calif. ADV. PG. 208
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Technical Research Group, Inc., 17 Union Square, W., New York 3, N. Y.
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trionics Corp., P. O. Box 548, Madison 1, Wis.
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167
VITRO CORP. OF AMERICA, 261 Madison Ave., New York 16, N. Y. ADV. PG. 147
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 130
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.

Irradiation—Accelerator

American Nuclear Science Corp., 61 Broadway, New York 6, N. Y.
APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60
Atomation, Inc., 5959 S. Hoover St., Los Angeles 44, Calif.
Electronized Chemicals Corp., 846 Lafferts Ave., Brooklyn 3, N. Y.
GENERAL ATOMIC DIV. OF GENERAL DYNAMICS CORP., P. O. Box 608, San Diego 12, Calif. ADV. PG. 111
HIGH VOLTAGE ENGINEERING CORP., 5 Redford St., Burlington, Mass. ADV. PG. 170, 171
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Radiological Testing Labs., 2716 Marshall Court, Doctor's Park, Madison, Wis.
Societe Anonyme de Machines Electrostatiques, S. P., 150, Grenoble, France
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
Trionics Corp., P. O. Box 548, Madison 1, Wis.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

Irradiation—Isotopic

Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
American Nuclear Science Corp., 61 Broadway, New York 6, N. Y.
Atomation, Inc., 5959 S. Hoover St., Los Angeles 44, Calif.

ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Green & Co., Inc., Arnold, 122 Hampshire St., Cambridge, Mass.
Industrial Nuclear Radiation Consultants, Box 647, New Haven 3, Conn.
Industrial X-Ray & Research, Inc., 880 Second St., Muskegon, Mich.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Quantum, Inc., Lutbery Ave., Wallingford, Conn.
Radiation Applications Inc., 342 Madison Ave., New York 17, N. Y.
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas

Irradiation—Reactor

Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
Aerojet-General Nucleonics, San Ramon, Calif.
AIRMATIC SYSTEMS CORP., 441 Market St., Saddle Brook, Rochelle Park, N. J. ADV. PG. 205
American Nuclear Science Corp., 61 Broadway, New York 6, N. Y.
Atomation, Inc., 5959 S. Hoover St., Los Angeles 44, Calif.
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gulton Industries, Durham Ave., Metuchen, N. J.
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
NEW ENGLAND NUCLEAR CORP., 575 Albany St., Boston, Mass. ADV. PG. 214
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Technical Research Group, Inc., 17 Union Square, W., New York 3, N. Y.

Laundry Service for Contaminated Clothing

NUCLEAR LAUNDRY SERVICE, INC., P. O. Box 4145, Waterbury 14, Conn. ADV. PG. 207

Leak Testing

ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
American Electronics, Inc., 688 W. Washington Blvd., Los Angeles 15, Calif.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Central Electronic Manufacturers, Inc., 2 Richwood Place, Denville, N. J.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
High Vacuum Equipment Corp., 2 Churchill Rd., Hingham, Mass.
Industrial Nuclear Radiation Consultants, Box 647, New Haven 3, Conn.
Kinetics Corp., 2 Churchill Rd., Hingham, Mass.
MAGNAFLUX CORP., 7346 W. Lawrence Ave., Chicago 31, Ill. ADV. PG. 118
Nuclear Consultants, Inc., 9842 Manchester Rd., St. Louis 19, Mo.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
RADIATION DETECTION CO., INC., 576 College Ave., Palo Alto, Calif. ADV. PG. 208
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trionics Corp., P. O. Box 548, Madison 1, Wis.
U. S. RADIUM CORP., Morristown, N. J. ADV. PG. 183
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.
Whittington Pump & Engineering Corp., 1126 Prospect St., Indianapolis 3, Ind.

Metallurgical Research & Development

Aerojet-General Nucleonics, San Ramon, Calif.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Alloys Unlimited, Inc., 44-18 Vernon Blvd., Long Island City 1, N. Y.
AMERICAN METAL CO., LTD., THE, 61 Broadway, New York 6, N. Y. ADV. PG. 179
American Nuclear Science Corp., 61 Broadway, New York 6, N. Y.
American Optical Co., Instrument Div., Box A, Buffalo 15, N. Y.
Avco Mfg. Corp., Research & Advanced Development Div., 20 S. Union St., Lawrence, Mass.
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Bork & Co., Inc., F. W., Park Place East, Wood Ridge, N. J.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
Brooks & Perkins, Inc., 261 Constitution Ave., N. W., Washington 1, D. C.
Brush Beryllium Co., 4301 Perkins Ave., Cleveland 3, Ohio
Chromalloy Corp., 450 Tarrytown Rd., White Plains, N. Y.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Curtiss-Wright Corp., Industrial & Scientific Products Div., Fairfield Rd., Caldwell Township, N. J.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
GENERAL ATOMIC DIV. OF GENERAL DYNAMICS CORP., P. O. Box 608, San Diego 12, Calif. ADV. PG. 111
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Green & Co., Inc., Arnold, 122 Hampshire St., Cambridge, Mass.
Harlss, Granta Terrace, Stapleford, Cambridge, England
Horizons, Inc., 2891 E. 79th St., Cleveland, Ohio
Indium Corp. of America, 1676 Lincoln Ave., Utica 4, N. Y.
Isomet Corp., 118 Union St., Palisades Park, N. J.
ISOTOPES, INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 148
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Johnston & Funk Titanium Corp., W. Komrow Ave., Wooster, Ohio
Kennametal, Inc., Latrobe, Pa.
Kinetics Corp., 2 Churchill Rd., Hingham, Mass.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
LADISH CO., 5458 S. Packard Ave., Cudahy, Wis. ADV. PG. 8A-9B
Ledoux & Co., 359 Alfred Ave., Teaneck, N. J.
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
MSH Research Corp., Callery, Pa.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
Metals Research & Development, Inc., Tuckahannock Ave., Exeter, Pa.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
National Research Corp., 70 Memorial Drive, Cambridge 42, Mass.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
Nay Co., J. M., Drawer 990, Hartford, Conn.
Nordon Kotay Corp., Commerce Rd., Stamford, Conn.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
NUCLEAR METALS, INC., 224 Albany St., Cambridge 39, Mass. ADV. PG. 154
Nucor Research, Inc., 2421 Walcott, Ferndale, Mich.
Penn-Texas Corp., Nuclear Engineering Div., 730 Fifth Ave., New York, N. Y.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185
Rem-Cru Titanium, Inc., Midland, Pa.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Sintercast Corp. of America, 134 Woodworth Ave., Yonkers, N. Y.
Small, Inc., Foster D., 29 W. 15th St., New York 11, N. Y.
SYLVANIA-CORNING NUCLEAR CORP., Bayside, N. Y. ADV. PG. 46
Technical Research Group, Inc., 17 Union Square, W., New York 3, N. Y.
Texas Research Foundation, Renner, Texas
Timax Corp., 153 E. 26th St., New York 10, N. Y.
Trionics Corp., P. O. Box 548, Madison 1, Wis.
U. S. Testing Co., Inc., 1415 Park Ave., Hoboken, N. J
VITRO CORP. OF AMERICA, 261 Madison Ave., New York 16, N. Y. ADV. PG. 147

Nuclear Material Accountability

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
American Nuclear Science Corp., 61 Broadway, New York 6, N. Y.
ASTRA, INC., P. O. Box 163, Milford, Conn. ADV. PG. 198
Atmo Engineering Co., 173 W. Madison St., Chicago 2, Ill.
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
Nordon Kotay Corp., Commerce Rd., Stamford, Conn.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR METALS, INC., 224 Albany St., Cambridge 39, Mass. ADV. PG. 154
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Quantum, Inc., Lutbery Ave., Wallingford, Conn.
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas

Nuclear Traffic & Transportation Consultant

ELLEN, M. W., 7209 W. Adams St., Forest Park, Ill. ADV. PG. 198

Radioactive Waste Disposal

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
American Electronics, Inc., 688 W. Washington Blvd., Los Angeles 15, Calif.
Applied Research Corp., 135 S. La Salle St., Chicago, Ill.
Atomation, Inc., 5959 S. Hoover St., Los Angeles 44, Calif.
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
ATOMIC ENERGY WASTE DISPOSAL SERVICE, 5410 Bond St., Oakland 1, Calif. ADV. PG. 204
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Atmo Engineering Co., 173 W. Madison St., Chicago 2, Ill.
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
Blodgett & Calley, Inc., 16 Court St., Boston, Mass.
CROSSROADS MARINE DISPOSAL CORP., 261 Wharf, Boston, Mass. ADV. PG. 157
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 418, Mountain Lakes, N. J. ADV. PG. 203
LANDAUER, JR., & CO., R. S., 26 Plaza, Park Forest, Ill. ADV. PG. 168
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Nordon Kotay Corp., Commerce Rd., Stamford, Conn.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
RADIOLOGICAL SERVICE CO., 28-22A Astoria Blvd., Long Island City, N. Y. ADV. PG. 187
Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill.
Technical Research Group, Inc., 17 Union Square, W., New York 3, N. Y.

Reactor Hazard Evaluation

ACF INDUSTRIES, INC., NUCLEAR PRODUCTS-ERCO DIV., 508 Kennedy St., N. W., Washington 11, D. C. ADV. PG. 44A-44D
AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Aerojet-General Nucleonics, San Ramon, Calif.

ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
ASTRA, INC., P. O. Box 163, Milford, Conn. ADV. PG. 198
Atna Engineering Co., 173 W. Madison St., Chicago 2, Ill.
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Ebasco Services, Inc., 2 Rector St., New York 6, N. Y.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
General Nuclear Engineering Corp., P. O. Box 245, Dunedin, Fla.
Intermuclear Co., 7 N. Brentwood Blvd., Clayton 5, Mo.
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
Nucledyne Corp., Sub. of Cook Electric Co., 8100 N. Monticello Ave., Skokie, Ill.
Quantum, Inc., Lutbery Ave., Wallingford, Conn.
Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill.
Technical Research Group, Inc., 17 Union Square, W., New York 3, N. Y.

Sampling—Air

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
ALLIED RESEARCH ASSOCIATES, INC., 43 Leon St., Boston 15, Mass. ADV. PG. 192
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Atna Engineering Co., 173 W. Madison St., Chicago 2, Ill.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Pa.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Industrial Nuclear Radiation Consultants, Box 647, New Haven 3, Conn.
Industrial X-Ray & Research, Inc., 880 Second St., Muskegon, Mich.
ISOTOPES, INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 148
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Nucor Research, Inc., 2421 Wolcott, Ferndale, Mich.
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION DETECTION CO., INC., 576 College Ave., Palo Alto, Calif. ADV. PG. 208
Rempe Co., 334 N. Sacramento Blvd., Chicago 12, Ill.
Snell, Inc., Foster D., 29 W. 15th St., New York 11, N. Y.
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trionics Corp., P. O. Box 548, Madison 1, Wis.
U. S. Testing Co., Inc., 1415 Park Ave., Hoboken, N. J.

Sampling—Water

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
ALLIED RESEARCH ASSOCIATES, INC., 43 Leon St., Boston 15, Mass. ADV. PG. 192
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Atna Engineering Co., 173 W. Madison St., Chicago 2, Ill.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Industrial Nuclear Radiation Consultants, Box 647, New Haven 3, Conn.
Industrial X-Ray & Research, Inc., 880 Second St., Muskegon, Mich.
ISOTOPES, INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 148
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Lobgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Nucor Research, Inc., 2421 Wolcott, Ferndale, Mich.
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
RADIATION DETECTION CO., INC., 576 College Ave., Palo Alto, Calif. ADV. PG. 208
Snell, Inc., Foster D., 29 W. 15th St., New York 11, N. Y.
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trionics Corp., P. O. Box 548, Madison 1, Wis.
U. S. Testing Co., Inc., 1415 Park Ave., Hoboken, N. J.

Site Selection & Preparation

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Aerojet-General Nucleonics, San Ramon, Calif.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
ASTRA, INC., P. O. Box 163, Milford, Conn. ADV. PG. 198
Atna Engineering Co., 173 W. Madison St., Chicago 2, Ill.
Austin Co., The, 16112 Euclid Ave., Cleveland 12, Ohio
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
BROOKHAVEN INDUSTRIAL COMMITTEE, P. O. Box 232, Patchogue, N. Y. ADV. PG. 141
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Ebasco Services, Inc., 2 Rector St., New York 6, N. Y.
Foglas Construction Co., Minneapolis, Minn.
Ferguson Co., Inc., H. K., 11th at Walnut, Cleveland 14, Ohio
Gibbs & Hill, Inc., Pennsylvania Station, New York 1, N. Y.
Herzo Engineering Co., 400 W. Madison St., Chicago 6, Ill.
ISOTOPES, INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 148
KAISER ENGINEERS, ATOMIC ENERGY DIV. OF HENRY J. KAISER CO., Oakland 12, Calif. ADV. PG. 11
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
Manio Research Laboratory, 538 Phelan Ave., San Jose, Calif.
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Nucledyne Corp. Sub. of Cook Electric Co., 8100 N. Monticello Ave., Skokie, Ill.
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill.
Stone & Webster Engineering Corp., 90 Broad St., New York 5, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
VITRO CORP. OF AMERICA, 261 Madison Ave., New York 16, N. Y. ADV. PG. 147

Testing—Environmental

Abrams Instrument Corp., 600-620 E. Shiawassee St., Lansing, Mich.
Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
Aerojet-General Nucleonics, San Ramon, Calif.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Avco Mfg. Corp., Research & Advanced Development Div., 20 S. Union St., Lawrence, Mass.
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Canadian Applied Research, Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Pa.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hunter-Bristol Corp., Bristol, Pa.
ISOTOPES, INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 148
Martin Co., The, Nuclear Div., Baltimore 3, Md.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
Nems-Clarke, Inc., 919 Jesup-Blair Drive, Silver Spring, Md.
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
Nucor Research, Inc., 2421 Wolcott, Ferndale, Mich.
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Penn-Texas Corp., Nuclear Engineering Div., 730 Fifth Ave., New York 19, N. Y.
RADIATION DETECTION CO., INC., 576 College Ave., Palo Alto, Calif. ADV. PG. 208
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Snell, Inc., Foster D., 29 W. 15th St., New York 11, N. Y.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Tele-Dynamics, Inc., 5000 Parkside Ave., Philadelphia 3, Pa.
Tenney Engineering, Inc., 1090 Springfield Rd., Union, N. J.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trionics Corp., P. O. Box 548, Madison 1, Wis.
UNITED SHOE MACHINERY CORP., ATOMIC POWER DEPT., RESEARCH DIV., Balch St., Beverly, Mass. ADV. PG. 107
U. S. Testing Co., Inc., 1415 Park Ave., Hoboken, N. J.
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.
Waters Manufacturing, Inc., Boston Post Rd., Wayland, Mass.

Testing—Nondestructive

See also RADIOGRAPHIC EQUIPMENT

Aerojet-General Nucleonics, San Ramon, Calif.
Alcor Instruments, Inc., 17 Industrial Ave., Little Ferry, N. J.
ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
American Nuclear Science Corp., 61 Broadway, New York 6, N. Y.
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
Applied Research Labs., P. O. Box 1710, Glendale 5, Calif.
Arde Associates, 75 Austin St., Newark 2, N. J.
Atomation, Inc., 5959 S. Hoover St., Los Angeles 44, Calif.
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
Avco Mfg. Corp., Research & Advanced Development Div., 20 S. Union St., Lawrence, Mass.
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Branson Instruments, Inc., 37 Brown House Rd., Stamford, Conn.
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Curtiss-Wright Corp., Industrial & Scientific Products Div., Fairfield Rd., Caldwell Township, N. J.

Falk & Co., Ltd., M., Emefco House, Bell St., Reigate (Surrey), England
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
Green & Co., Inc., Arnold, 122 Hampshire St., Cambridge, Mass.
Industrial Nuclear Radiation Consultants, Box 647, New Haven 3, Conn.
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Industrial X-Ray & Research, Inc., 880 Second St., Muskegon, Mich.
Isotope Products, Ltd., Davis Rd., Oakville, Ontario, Canada
ISOTOPES, INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 148
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Kinetic Instruments Co., 3250 Skokie Valley Rd., Highland Park, Ill.
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
MAGNAFLUX CORP., 7346 W. Lawrence Ave., Chicago 31, Ill. ADV. PG. 118
Martin Co., The, Nuclear Div., Baltimore 3, Md.
METALS & CONTROLS CORP., NUCLEAR PRODUCTS DIV., 40 Forest St., Attleboro, Mass. ADV. PG. 119
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
NUCLEAR METALS, INC., 224 Albany St., Cambridge 39, Mass. ADV. PG. 154
Nucor Research, Inc., 2421 Walcott, Ferndale, Mich.
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
Peschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Schutte & Koerting Co., Cornwell Heights, Bucks County, Pa.
Snell, Inc., Foster D., 29 W. 15th St., New York 11, N. Y.
Sperry Products, Inc., Danbury, Conn.
Tele-Dynamics, Inc., 5000 Pallisade Ave., Philadelphia 3, Pa.
Texas Research Foundation, Renner, Texas
Trionics Corp., P. O. Box 548, Madison 1, Wis.
U. S. Testing Co., Inc., 1415 Park Ave., Hoboken, N. J.
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.

Urinalysis

ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Controls for Radiation, Inc., 130 Alewife Brook Parkway, Cambridge 40, Mass.
Industrial Nuclear Radiation Consultants, Box 647, New Haven 3, Conn.
ISOTOPES, INC., 123 Woodland Ave., Westwood, N. J. ADV. PG. 148
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
NEW ENGLAND NUCLEAR CORP., 575 Albany St., Boston, Mass. ADV. PG. 214
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR DEVELOPMENT CORP. OF AMERICA, 5 New St., White Plains, N. Y. ADV. PG. 16
NUCLEAR SCIENCE & ENGINEERING CORP., P. O. Box 1091, Pittsburgh 36, Pa. ADV. PG. 208
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
RADIATION DETECTION CO., INC., 576 College Ave., Palo Alto, Calif. ADV. PG. 208
RADIOCHEMISTRY, INC., 1146 S. Lewis Ave., Tulsa, Okla. ADV. PG. 196
Texas Nuclear Corp., Box 9267, Allendale Station, Austin 17, Texas
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120

SERVOMECHANISMS

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Advance Instrument Corp., 1109 Sixth Ave., Neptune, N. J.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Allied Engineering & Production Corp., 242 Standing Ave., Alameda, Calif.
Anatron Div., Endevco Corp., 161 E. California, Pasadena, Calif.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Barber-Colman Co., Electrical & Small Motors Div., Rockford, Ill.
Barr & Stroud Ltd., Caxton St., Anniesland, Glasgow, W. 3, Scotland
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Bolock Instrument Corp., 111–01 14th Ave., College Point, N. Y.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Chicago Aerial Industries, Inc., 1980 Hawthorne Ave., Melrose Park, Ill.
Clifton Precision Products Co., Broadway & Marple Ave., Clifton Heights, Pa.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Daimo Victor Co., 1515 Industrial Way, Belmont, Calif.
Daystrom Transicoil Corp., Worcester, Pa.
Eastern Industries, Inc., 100 Skiff St., Hamden, Conn.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Edcliff Instruments, Inc., 1711 S. Mountain Ave., Monrovia, Calif.
Edison Industries, Thomas A., Instrument Div., West Orange, N. J.
Electric Tachometer Corp., 68th & Upland Sts., Philadelphia 42, Pa.
Electro-Measurements, Inc., 7524 S. W. Macadam Ave., Portland 1, Ore.
Electronic Associates, Inc., Long Branch, N. J.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fielden Electronics Ltd., Poston Rd., Whytenshawe, Manchester, England
FORD INSTRUMENT CO., DIV. OF SPERRY-RAND CORP., 31–10 Thomson Ave., Long Island City, N. Y. ADV. PG. 125
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hanson-Gorrill-Brian, Inc., 82 Hazel St., Glen Cove, N. Y.
Helipot Corp., Newport Beach, Calif.
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Link Aviation, Inc., Binghamton, N. Y.
Litton Industries Maryland Div., 4910 Calvert Rd., College Park, Md.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
Measurement Engineering, Ltd., Ampriar, Ontario, Canada
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Ordnance Div., 600 2nd St., Hopkins, Minn.
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
Ostar Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Sperry Gyroscope Div. of Sperry-Rand Corp., Great Neck, N. Y.
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thompson Products, Inc., 2196 Clarkwood Ave., Cleveland 3, Ohio
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.

SHADES—Light-Proof

AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Hoosier Tarpaulin & Canvas Goods Co., 1302 W. Washington Ave., Indianapolis 6, Ind.
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50

SHAFTS—Flexible

Johnson Co., E. F., Waseca, Minn.
Kupfrian Mfg. Corp., 395 State St., Binghamton, N. Y.
Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio
Stewart Corp., F. W., 4311–13 Ravenswood Ave., Chicago 13, Ill.
Stow Mfg. Co., 355 Shear St., Binghamton, N. Y.
Waters Manufacturing, Inc., Boston Post Rd., Wayland, Mass.
White Dental Mfg. Co., S. S., 10 E. 40th St., New York 16, N. Y.

SHIELDING—Radiation

See also BRICKS & VIEWING EQUIPMENT

Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
Aerojet-General Nucleonics, San Ramon, Calif.
Air Engineering Co., 49 Hillside St., Watertown 72, Mass.
Allied Engineering & Production Corp., 242 Standing Ave., Alameda, Calif.
Allied Resinous Products Inc., Box 620, Conneaut, Ohio
Alpha Metals, Inc., 56 Water St., Jersey City 4, N. J.
AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
American Agile Corp., P. O. Box 168, Bedford, Ohio
American Brass Co., Waterbury 20, Conn.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Bettinger Corp., Waltham, Mass.
Brooks & Perkins, Inc., 261 Constitution Ave., N. W., Washington 1, D. C.
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Cambridge Smelting Co., 100 Pacific St., Cambridge 39, Mass.
Canadian Radium & Uranium Corp., 830 Fifth Ave., New York 20, N. Y.
Chance-Pilkington Optical Works, Pilkington Brothers Ltd., St. Asaph, Flintshire, Great Britain
Chemical Development Corp., Endicott St., Danvers, Mass.
CONCRETE FABRICATORS, INC., 568 Union Commerce Bldg., Cleveland 14, Ohio. ADV. PG. 208
Conneaut Rubber & Plastic Div. of U. S. Stoneware Co., Commerce St., Conneaut, Ohio
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230–11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
E. R. D. Engineering Co., Ltd., Ipswich Rd., Slough, Buckinghamshire, England
Edlow Lead Co., 729 Bank St., Columbus 16, Ohio
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
General Electric Co., Metallurgical Products Dept., 11139 E. Eight Mile Drive, Detroit 32, Mich.
General Lead Construction Corp., 1800 Harrison Ave., Kearny, N. J.
General Radiological Ltd., 15–18 Clipstone St., London, W. 1, England
Glaser Lead Co., Inc., 31 Wyckoff Ave., Brooklyn 27, N. Y.
Hamilton Co., 1134 Whitley St., Whittier, Calif.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotope Accessories Co., Box 9354, Philadelphia 39, Pa.
Isotope Developments Ltd., Boonham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 150

Korrect Kutting Mfg. Co., 457 Park Blvd., Glen Ellen, Ill.
LENNARD CO., INC., P. M., 1 Hanson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Mallory-Schwarzkopf Metals Inc., 320 Yonkers Ave., Yonkers, N. Y.
METALS DISINTEGRATING CO., INC., P. O. Box 290, Elizabeth, N. J. ADV. PG. 208
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
NORTON CO., 1 New Bond St., Worcester 6, Mass. ADV. PG. 37
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
PACIFIC COAST ENGINEERING CO., Oak & Clement Sts., Alameda, Calif. ADV. PG. 116
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
Pittsburgh Des Moines Steel Co., Pittsburgh 25, Pa.
Pittsburgh Plate Glass Co., 1 Gateway Center, Pittsburgh 22, Pa.
Proco Chemical Corp., Allen Blvd., Farmingdale, N. Y.
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halstead St., Chicago 21, Ill. ADV. PG. 68
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
TECHNICAL ASSOCIATES, 140 W. Providencia Ave., Burbank, Calif. ADV. PG. 195
Technical Research Group, Inc., 17 Union Square, W., New York 3, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
U. S. Stoneware Co., Akron 9, Ohio

SHIELDS—Magnetic

Ace Engineering & Machine Co., Inc., 3642 N. Lawrence St., Philadelphia 40, Pa.
Emerson & Cuming, Inc., 869 Washington St., Canton, Mass.
General Electric Co., Metallurgical Products Dept., 11139 E. Eight Mile Blvd., Detroit 32, Mich.
Hallett Mfg. Co., 5910 Bowcroft Ave., Los Angeles 16, Calif.
Magnetics, Inc., Box 391, Butler, Pa.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
PERFECTION MICA CO., MAGNETIC SHIELD DIV., 1322 N. Elston Ave., Chicago 22, Ill. ADV. PG. 199

SIGNALS—Warning

Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Dialight Corp., 60 Stewart Ave., Brooklyn 37, N. Y.
Gems Co., P. O. Box 222, Newinton, Conn.
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
KYBERNETES CO., 9 E. 40th St., New York 16, N. Y. ADV. PG. 164
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
Scan Instrument Corp., 1811 W. Irving Park Rd., Chicago, Ill.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Uranium Ore & Supply Co., 546 W. Lake St., Chicago 6, Ill.
Wheelock Signals, Inc., 273 Branchport Ave., Long Branch, N. J.

SIGNS—Warning, Radiation

Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
ATOMIC ACCESSORIES INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
Bottinger Corp., Waltham, Mass.
Brady Co., W. H., 727 W. Glendale Ave., Milwaukee 12, Wis.
Collier Mfg. Corp., Gainesville, Ga.
HEALTH PHYSICS SERVICE, INC., 1111 Law St., Baltimore 2, Md. ADV. PG. 194
Identification Service Corp., 144 W. 46th St., New York, N. Y.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
NUCLEONIC CORP. OF AMERICA, 196 DeGraw St., Brooklyn 31, N. Y. ADV. PG. 177, 203, 207
Pacific Transducer Corp., 11836 S. W. Pico Blvd., Los Angeles 64, Calif.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
U. S. RADIUM CORP., Morristown, N. J. ADV. PG. 163
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.

SILICA—Fused

Amersil Co., Inc., 683 Ramsey Ave., Hillside, N. J.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
Jones Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Realtron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
Thermal American Fused Quartz Co., Inc., 18-20 Salem St., Dover, N. J.

SILICONE & SILICONE PRODUCTS

Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Auburn Mfg. Co., The, 500 Stack St., Middletown, Conn.
Bisonite Co., Inc., P. O. Box 84, Kenmore Station, Buffalo 17, N. Y.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Clay-Adams, Inc., 141 E. 25th St., New York 10, N. Y.
Continental-Diamond Fibre Corp., Newark, Delaware
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Dow Corning Corp., Midland, Mich.
Electro Technical Products Div. of Sun Chemical Corp., 113 E. Centre St., Nutley, N. J.
General Electric Co., Silicone Products Dept., Waterford, N. Y.
Hitemp Wires, Inc., 26 Windsor Ave., Mineola, N. Y.
Jones Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Silicones Division, Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
U. S. Stoneware Co., Akron 9, Ohio

SIMULATORS

See COMPUTERS—Analog

SIMULATORS—Reactor

Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Martin Co., The, Nuclear Div., Baltimore 3, Md.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 65-66, 168, 169

SINKS—Laboratory

See also FURNITURE—Laboratory

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Alden Systems Co., Alden Research Center, Westboro, Mass.
American Agile Corp., P. O. Box 168, Bedford, Ohio
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
BAR-RAY PRODUCTS, INC., 209 23th St., Brooklyn 32, N. Y. ADV. PG. 73
Brown Morse Co., Muskegon, Mich.
Chicago Apparatus Co., 1735 N. Ashland Ave., Chicago 22, Ill.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
General Lead Construction Corp., 1800 Harrison Ave., Kearny, N. J.
Hamilton Mfg. Co., Two Rivers, Wis.
Haveg Industries, Inc., Halocarbon Div., 950 Greenbank Rd., Wilmington 8, Del.
KEWAUNEE MFG. CO., 5083 S. Center St., Adrian, Mich. ADV. PG. 174
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Leedal Stainless Steel Products, Inc., 2929 S. Halsted St., Chicago 8, Ill.
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Metalab Equipment Co., Div. of Norbute Corp., 282 Duffy Ave., Hicksville, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Universal Industrial Equipment Co., 1625 Paterson Plank Rd., Secaucus, N. J.
Warren Corp., The, 2901 Brighton Rd., Pittsburgh 12, Pa.

SITE SELECTION & PREPARATION

See SERVICES

SOLENOIDS

Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Automatic Switch Co., Hanover Rd., Florham Park, N. J.
Caltron Products Co., 1310-12 S. Hobart Blvd., Los Angeles 6, Calif.
Comar Electric Co., 3349 W. Addison St., Chicago 18, Ill.
Controls Co. of America, 2450 N. 32nd St., Milwaukee 45, Wis.
Cutler-Hammer, Inc., 411 N. 12th St., Milwaukee 1, Wis.
General Controls Co., 801 Allen Ave., Glendale Ave., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Grand Transformers, Inc., Grand Haven, Mich.
Guardian Electric Co., 1625 W. Walnut St., Chicago 12, Ill.
Industrial Transformer Corp., Gouldsboro, Pa.
Kackley Co., O. C., 3400 Cleveland St., Skokie, Ill.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Keystone Products Co., 904-6 23rd St., Union City, N. J.
Knapp, Inc., 1307 66th St., Emeryville 8, Calif.
Koontz-Wagner Electric Co., N. Michigan & Marion, South Bend, Ind.
Laurence Co., Inc., R. G., 134 Summit St., Tenafly, N. J.
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, Ohio
Leland, Inc., G. H., 123 Webster, Dayton 2, Ohio
Peerless Instrument Co., Inc., 90-15 Corona Ave., Elmhurst 73, N. Y.
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Pollak Corp., Joseph, 81 Freeport St., Boston 22, Mass.
Precision, Inc., 730 Lyndale Ave., N., Minneapolis, Minn.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Struthers-Dunn, Inc., Lambs Rd., Pitman, N. J.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
United Aircraft Products, Inc., 1116 Bolander, Dayton, Ohio

SOURCES—Alpha

Aerojet-General Nucleonics, San Ramon, Calif.
ANTON ELECTRONIC LABS., INC., 1226-38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
Atomic Laboratories, 3086 Claremont Ave., Berkeley, Calif.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Isotope Developments Ltd., Boenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
NEW ENGLAND NUCLEAR CORP., 575 Albany St., Boston, Mass. ADV. PG. 216
Nuclear Aids Corp., 612 N. Michigan Ave., Chicago, Ill.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56

TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
U. S. RADIUM CORP., Morristown, N. J. ADV. PG. 163

SOURCES—Beta

Aerojet-General Nucleonics, San Ramon, Calif.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
Atomic Laboratories, 3086 Claremont Ave., Berkeley, Calif.
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
NEW ENGLAND NUCLEAR CORP., 575 Albany St., Boston, Mass. ADV. PG. 214
Nuclear Aids Corp., 612 N. Michigan Ave., Chicago, Ill.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Radiation Research Corp., 140 E. 59th St., New York, N. Y.
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
U. S. RADIUM CORP., Morristown, N. J. ADV. PG. 163
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.

SOURCES—Gamma

Aerojet-General Nucleonics, San Ramon, Calif.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Isotope Products, Ltd., Davis Rd., Oakville, Ontario, Canada
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Knapp Mills, Inc., 23–15 Borden Ave., Long Island City 1, N. Y.
NEW ENGLAND NUCLEAR CORP., 575 Albany St., Boston, Mass. ADV. PG. 214
Nuclear Aids Corp., 612 N. Michigan Ave., Chicago, Ill.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Research Corp., Southampton, Pa.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Radiation Applications Inc., 342 Madison Ave., New York 17, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
U. S. RADIUM CORP., Morristown, N. J. ADV. PG. 163
VOLK RADIO CHEMICAL CO., 5412 N. Clark St., Chicago 40, Ill. ADV. PG. 120
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.

SOURCES—Neutron

Aerojet-General Nucleonics, San Ramon, Calif.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60
ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
HIGH VOLTAGE ENGINEERING CORP., S. Bedford St., Burlington, Mass. ADV. PG. 170, 171
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Kaman Aircraft Corp., Nuclear Div., 2013 Ridgecrest Drive, S. E., Albuquerque, N. M.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
U. S. RADIUM CORP., Morristown, N. J. ADV. PG. 163

SPECTROGRAPHS

Applied Research Labs., P. O. Box 1710, Glendale 5, Calif.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Ercona Corp., 551 Fifth Ave., New York, N. Y.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Philips Electronics Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.

SPECTROMETERS—Gamma Ray

American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Dynatron Radio Ltd., Castle Hill, Maidenhead, Berks., England
FORRO SCIENTIFIC CO., THE, 833 Lincoln St., Evanston, Ill. ADV. PG. 178
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
HAMNER ELECTRONICS CO., Box 831, Princeton, N. J. ADV. PG. Second Cover
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
NATIONAL RADIAC, INC., 479 Washington St., Newark 2, N. J. ADV. PG. 36
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
NUCLEAR-ELECTRONICS CORP., 2632–36 W. Cumberland St., Philadelphia 32, Pa. ADV. PG. 149
NUCLEAR MEASUREMENTS CORP., 2460 N. Arlington Ave., Indianapolis 18, Ind. ADV. PG. 133
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
RADIATION INSTRUMENT DEVELOPMENT LAB., 5737 S. Halsted St., Chicago 21, Ill. ADV. PG. 68
SOCIETE D'APPLICATIONS INDUSTRIELLES DE LA PHYSIQUE (S.A.I.P.), 146, Bd. de Charonne, Paris, France. ADV. PG. 196
Technical Measurement Corp., 140–142 State St., New Haven, Conn.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio ADV. PG. 166, 167

SPECTROMETERS—Liquid Scintillation

Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
PACKARD INSTRUMENT CO., INC., P. O. Box 428, La Grange, Ill. ADV. PG. 213
Technical Measurement Corp., 140–142 State St., New Haven, Conn.

SPECTROMETERS—Mass

Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
Measurement Engineering Ltd., Ampriar, Ontario, Canada
NRD INSTRUMENT CO., 6427 Etzel Ave., St. Louis 14, Mo. ADV. PG. 153
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Pacific Electric Motor Co., 1009 66th Ave., Oakland 21, Calif.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Scientific Instruments Div. of Beckman Instruments, Inc., Fullerton Calif.
Vacuum Industrial Applications, Ltd., Netherton Rd., Wishaw, Lanarkshire, Scotland
Veeco Vacuum Corp. 86 Denton Ave., New Hyde Park, N. Y.

SPECTROMETERS—Nuclear Magnetic Resonance

Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Sperry Gyroscope Div. of Sperry-Rand Corp., Great Neck, N. Y.
Varian Associates, 611 Hansen Way, Palo Alto, Calif.

SPECTROMETERS—Recording

Applied Physics Corp., 362 W. Colorado St., Pasadena 1, Calif.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio

NUCLEAR AND ALLIED PRODUCTS

Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
HAMNER ELECTRONICS CO., Box 531, Princeton, N. J. ADV. PG. Second Cover
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
Neutronics Research Co., 165 Lake St., Waltham, Mass.
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Phoenix Precision Instrument Co., 3803-05 N. 5th St., Philadelphia, Pa.
Process & Instruments, 15 Stone Ave., Brooklyn 23, N. Y.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Scientific Instruments Div. of Beckman Instruments, Inc., Fullerton, Calif.
Technical Measurement Corp., 140-142 State St., New Haven, Conn.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140

SPECTROPHOTOMETERS

American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa.
American Optical Co., Instrument Div., Box A, Buffalo 15, N. Y.
Applied Physics Corp., 362 W. Colorado Ave., Pasadena 1, Calif.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Coleman Instruments, Inc., 318 Madison St., Maywood, Ill.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Instrument Development Lab., Inc., 67 Mechanic St., Attleboro, Mass.
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
Neutronics Research Co., 165 Lake St., Waltham, Mass.
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Phoenix Precision Instrument Co., 3803-05 North 5th St., Philadelphia, Pa.
Process & Instruments, 15 Stone Ave., Brooklyn 33, N. Y.
Scientific Instruments Div. of Beckman Instruments, Inc., Fullerton, Calif.
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.

STANDARDS—Radioactivity

See RADIOACTIVITY STANDARDS

STEAM & AIR STRAINERS
STEAM & AIR TRAPS
STEAM GENERATORS

See POWER PLANT EQUIPMENT

STERILIZERS

Aetna Scientific Co., Second & Spring Sts., Everett 49, Mass.
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill.
Modern Laboratory Equipment Co., 1809-11 First Ave., New York 28, N. Y.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Societe Anonyme De Machines Electrostatiques, B. P. 150 Grenoble, France
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Universal Industrial Equipment Co., 1625 Paterson Plank Rd., Secaucus, N. J.

STILLS—Distilled Water

Aerco Corp., Paris Ave., P. O. Box 248, Northvale, N. J.
Aetna Scientific Co., Second & Spring Sts., Everett 49, Mass.
Amersil Co., Inc., 685 Ramsey Ave., Hillside, N. J.
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Consolidated Electrodynamics Corp., Rochester Div., 1775 Mt. Read Blvd., Rochester, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Griscom-Russell Co., Massillon, Ohio
Maxim Silencer Co., The, Homestead Ave., Hartford, Conn.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
STOKES CORP., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 132
Thermal American Fused Quartz Co., Inc., 18-20 Salem St., Dover, N. J.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Townson & Mercer, Ltd., Croydon, Surrey, England

STILLS—Laboratory

Aetna Scientific Co., Second & Spring St., Everett 49, Mass.
Amersil Co., Inc., 685 Ramsey Ave., Hillside, N. J.
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Pfeudler Co., 1002 West Ave., Rochester, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.
STOKES CORP., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 132
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancs, England
Townson & Mercer, Ltd., Croydon, Surrey, England

STRESS ANALYSIS EQUIPMENT

Allegany Instrument Co., Inc., Cumberland, Md.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Arde Associates, 75 Austin St., Newark 2, N. J.
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Bruel & Kjaer, Naerum, Denmark
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Century Electronics & Instruments, Inc., P. O. Box 6216, Tulsa 17, Okla.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Hathaway Instrument Div., Hamilton Watch Co., 5800 E. Jewell, Denver, Colo.
Holland Div. of Minneapolis-Honeywell Regulator Co., 5200 E. Evans Ave., Denver 22, Colo.
Kinetic Instrument Co., 3250 Skokie Valley Rd., Highland Park, Ill.
MAGNAFLUX CORP., 7546 W. Lawrence Ave., Chicago 31, Ill. ADV. PG. 118
Martin Co., The, Nuclear Div., Baltimore 3, Md.
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208

SUB-CRITICAL REACTORS

See REACTORS

SURVEY METERS

See COUNTERS and DOSIMETERS

TELEMETERING SYSTEMS

Aerovox Corp., Pacific Coast Div., 2724 S. Peck Rd., Monrovia, Calif.
Alden Electronic & Impulse Recording Equipment Co., Westboro, Mass.
American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa.
Anatran Div., Endevco Corp., 161 E. California, Pasadena, Calif.
B-I-F Industries, Inc., 530-D Harris Ave., Providence 1, R. I.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Bolock Instrument Corp., 111-01 14th Ave., College Point, N. Y.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Collins Radio Co., Cedar Rapids, Iowa
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cubic Corp., 5575 Kearny Villa Rd., San Diego 11, Calif.
Daimo Victor Co., 1515 Industrial Way, Belmont, Calif.
Daven Co., The, Route 10, Livingston, N. J.
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Electronic Engineering Co. of California, 1601 E. Chestnut St., Santa Ana, Calif.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass.
Federal Telephone & Radio Co., A Div. of IT&T, 100 Kingsland Rd., Clifton, N. J.
FORD INSTRUMENT CO., DIV. OF SPERRY-RAND CORP., 31-10 Thomson Ave., Long Island City 1, N. Y. ADV. PG. 125
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
General Electric Co., Communication Products Dept., Electronics Park, Syracuse, N. Y.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
KYBERNETES CO., 9 E. 40th St., New York 16, N. Y. ADV. PG. 164
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Lenkurt Electric Co., 1105 County Rd., San Carlos, Calif.
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Magnavox Co., The, Fort Wayne, Ind.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
Nucor Research, Inc., 2421 Walcott, Ferndale, Mich.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
PARSONS CO., RALPH M., ELECTRONICS DIV., 151 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
PHILIPS' GLOEILAMPENFABRIEKEN, N V., Eindhoven, Holland. ADV. PG. 56
Potter Aeronautical Corp., Route 22, Union, N. J.
Power Sources Inc., Burlington, Mass.
Radiation, Inc., P. O. Box 37, Melbourne, Fla.
RCA Service Co., Inc., Government Service Dept., Cherry Hill, Camden 8, N. J.
Radio Frequency Labs., Inc., Boonton 2, N. J.
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Tuller & Cooper Inc., 75 Front St., Brooklyn, N. Y.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Tele-Dynamics, Inc., 5000 Palisade Ave., Philadelphia 3, Pa.
Wang Laboratories, Inc., 37 Hurley St., Cambridge 41, Mass.

TELETHERAPY UNITS

ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129

BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Falk & Co., Ltd., M., Emefco House, Bell St., Reigate (Surrey), England
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
PICKER-X-RAY CORP., 25 South Broadway, White Plains, N. Y. ADV. PG. 142
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

TELEVISION SYSTEMS—Industrial

See VIEWING EQUIPMENT—Television

TEMPERATURE MEASURING APPARATUS

Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
Aero Research Instrument Co., 315 N. Aberdeen St., Chicago 7, Ill.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Assembly Products, Inc., Chesterland 6, Ohio
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
DYNA-EMPIRE, INC., 1075 Stewart Ave., Garden City, N. Y. ADV. PG. 197
Edison Industries, Thomas A., Instrument Div., West Orange, N. J.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo 1, Ohio
Electronic Control Corp., 1573 E. Forest St., Detroit 7, Mich.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Falk & Co., Ltd., M., Emefco House, Bell St., Reigate (Surrey), England
Fenwal, Inc., 120 Pleasant St., Ashland, Mass.
Fielden Electronics Ltd., Paston Rd., Whytenshawe, Manchester, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.
Gulton Industries, Durham Ave., Metuchen, N. J.
H-B Instrument Co., American & Bristol Sts., Philadelphia 40, Pa.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Illinois Testing Labs., 420 N. LaSalle St., Chicago, Ill.
Industrial Development Labs., Inc., 17 Pollock Ave., Jersey City 5, N. J.
Instrument Center, 85-G Reade St., New York 7, N. Y.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
KYBERNETES CO., 9 E. 40th St., New York 16, N. Y. ADV. PG. 164
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.
Magno-Pulse Corp., 11 Godwin Ave., Fair Lawn, N. J.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Boston Div., 1400 Soldiers Field Rd., Boston 35, Mass.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Minneapolis-Honeywell Regulator Co., Rubicon Instruments, Ridge Ave. at 35th St., Philadelphia 32, Pa.
Negretti & Zambra, Ltd., 122 Regent St., London, W. 1, England
New England Scientific Instruments Co., Box 498, Cambridge 39, Mass.
Offner Electronics Inc., 5330 N. Kedzie Ave., Chicago 25, Ill.
Partlow Corp., The, Dept. NBG-58, New Hartford, N. Y.
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Revere Corp. of America, Wallingford, Conn.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Technique Associates, Inc., 211 E. South St., Indianapolis, Ind.
Tele-Dynamics, Inc., 5000 Palisade Ave., Philadelphia 3, Pa.
Therma-Electric Co., Inc., Rochelle Park Post Office, Saddle Brook, N. J.
Towers & Co., Ltd., J. W., Victoria House, Widnes, Lancas, England
Tri-R Instruments, 24-15 44th Rd., Long Island City 1, N. Y.
Weksler Thermometer Corp., 195 E. Merrick Rd., Freeport, N. Y.
West Instrument Corp., 4363 W. Montrose Ave., Chicago 41, Ill.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 65-66, 168, 169
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Winslow Co., Inc., 9 Liberty St., Newark 2, N. J.

TEST EQUIPMENT—Nondestructive

Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Advance Instrument Corp., 1109 Sixth Ave., Neptune, N. J.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Alcar Instruments, Inc., 17 Industrial Ave., Little Ferry, N. J.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
Anatran Div., Endevco Corp., 161 E. California, Pasadena, Calif.
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Barnes Development Co., 213 W. Baltimore Pike, Lansdowne, Pa.
Belock Instrument Corp., 111-61 14th Ave., College Point, N. Y.
Branson Instruments, Inc., 37 Brown House Rd., Stamford, Conn.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
BUDD CO., THE, NUCLEAR SYSTEMS DIV., 2450 Hunting Park Ave., Philadelphia 32, Pa. ADV. PG. 44
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Christiansen Co., C. B., 164 Pennington St., Newark, N. J.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Cubic Corp., 5575 Kearny Villa Rd., San Diego 11, Calif.
Curtiss-Wright Corp., Industrial & Scientific Products Div., Fairfield Rd., Caldwell Township, N. J.
Custom Scientific Instruments, Inc., P. O. Box 170, Kearny, N. J.
Dice Co., J. W., Englewood 41, N. J.
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Falk & Co., Ltd., M., Emefco House, Bell St., Reigate (Surrey), England
General Radiological Ltd., 15-18 Clipstone St., London, W. 1, England
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Gulton Industries, Durham Ave., Metuchen, N. J.
Hunter-Bristol Corp., Bristol, Pa.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
Isotope Products, Ltd., Davis Rd., Oakville, Ontario, Canada
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Kahn & Co., Inc., 541 Windsor St., Hartford 1, Conn.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
Litton Industries, Maryland Div., 4910 Calvert Rd., College Park, Md.
MAGNAFLUX CORP., 7346 W. Lawrence Ave., Chicago 31, Ill. ADV. PG. 116
Magtrol, Inc., 240 Seneca St., Buffalo 2, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Monsen Laboratories, Inc., 207 Greenwich Ave., Stamford, Conn.
Menlo Research Laboratory, 538 Phelan Ave., San Jose, Calif.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Paschal Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
Resitron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
Riehle Testing Machines Div., American Machine & Metals, Inc., East Moline, Ill.
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Scott, Inc., H. H., 111 Powdermill Road, Maynard, Mass.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Societe Anonyme De Machines Electrostatiques, S. P., 150, Grenoble, France
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Sperry Products, Inc., Danbury, Conn.
Steiner-Ives Co., Springfield Rd., Union, N. J.
Sturtevant Mill Co., Park & Clayton Sts., Boston 22, Mass.
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Technical Electronics Corp., 4070 Inco Blvd., Culver City, Calif.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telatronics Laboratory, Inc., 54 Kinkel St., Westbury, N. Y.
Texas Nuclear Corp., Box 9267, Allandale Station, Austin 17, Texas
Trop-Arctic, Inc., 627 S. Mulberry St., Muncie, Ind.
Waterman Products Co., Inc., 2445-63 Emerald St., Philadelphia 25, Pa.
Whittington Pump & Engineering Corp., 1126 Prospect St., Indianapolis 3, Ind.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

TEST LOOPS

See LOOPS—Test

TESTERS—Hardness

Ardo Associates, 75 Austin St., Newark 2, N. J.
Barber-Colman Co., Electrical & Small Motors Div., Rockford, Ill.
Ercona Corp., 551 Fifth Ave., New York, N. Y.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Opplam Co., Inc., 83 Uhland St., East Rutherford, N. J.
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
Riehle Testing Machines Div., American Machine & Metals, Inc., East Moline, Ill.
Torsion Balance Co., 35 Monhegan St., Clifton, N. J.

TESTING—Environmental

See SERVICES

TESTING—Nondestructive

See SERVICES

THERMISTORS

Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Barnes Engineering Co., 30 Commerce Rd., Stamford, Conn.

Carborundum Co., Globar Div., Hyde Park Blvd., Niagara Falls, N. Y.
Fenwal, Inc., 120 Pleasant St., Ashland, Mass.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
General Electric Co., Metallurgical Products Dept., 11139 E. Eight Mile Drive, Detroit 32, Mich.
Gulton Industries, Durham Ave., Metuchen, N. J.
Keystone Carbon Co., Inc., Saint Marys, Pa.
LEEDS & NORTHRUP CO., 4970 Stenton Ave., Philadelphia 44, Pa. ADV. PG. 3, 4, 5
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Servo Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Victory Engineering Corp., 77 Springfield Rd., Union, N. J.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

THERMOCOUPLES

Aero Research Instrument Co., 315 N. Aberdeen St., Chicago 7, Ill.
American Thermo Electric Co., 7269 Santa Monica Blvd., Los Angeles 46, Calif.
Assembly Products, Inc., Chesterland 6, Ohio
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Barber Sales Co., 996-8 Edgewater Ave., Ridgefield, N. J.
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
DYNA-EMPIRE, INC., 1075 Stewart Ave., Garden City, N. Y. ADV. PG. 197
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E., 13, England
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Epic, 154 Nassau St., New York 38, N. Y.
Fenwal, Inc., Ashland, Mass.
Fielden Electronics Ltd., Paston Rd., Whytenshawe, Manchester, England
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fredericks Co., George E., Bethayres, Pa.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.
High Vacuum Equipment Corp., 2 Churchill Rd., Hingham, Mass.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Illinois Testing Labs., 420 N. LaSalle St., Chicago, Ill.
Lewis Engineering Co., 82 Rubber Ave., Naugatuck, Conn.
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Pyrometer Instrument Co., Inc., Bergenfield, N. J.
Revere Corp. of America, Wallingford, Conn.
Richards Co., Inc., Arkley S., 12 Winchester St., Newton Highlands 61, Mass.
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Suevic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Technique Associates, Inc., 211 E. South St., Indianapolis, Ind.
Thermo-Electric Co., Inc., Rochelle Park Post Office, Saddle Brook, N. J.
Vacuum Tube Products Co., Inc., 906 S. Cleveland St., Oceanside, Calif.
Wave Particle Corp., P. O. Box 252, Maple Park, Calif.
West Instrument Corp., 4343 W. Montrose Ave., Chicago 41, Ill.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Winslow Co., Inc., 9 Liberty St., Newark 2, N. J.

THERMONUCLEAR EQUIPMENT

Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
GENERAL ATOMIC DIV. OF GENERAL DYNAMICS CORP., P. O. Box 608, San Diego 12, Calif. ADV. PG. 111
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.

THERMOPILES—Neutron Sensitive

Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
NUCLEAR-CHICAGO CORP., 229 W. Erie St., Chicago, Ill. ADV. PG. 59
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.

THERMOSTATS

See also CONTROLS—Temperature

Burling Instrument Co., Inc., 16 River Rd., Chatham, N. J.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Control Products, Inc., 306 Sussex St., Harrison, N. J.
Curtiss-Wright Corp., Components Sales, 631 Central Ave., Carlstadt, N. J.
Edison Industries, Thomas A., Instrument Div., West Orange, N. J.
Fenwal, Inc., 120 Pleasant St., Ashland, Mass.
Fielden Electronics Ltd., Paston Rd., Whytenshawe, Manchester, England
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
G-V Controls, Inc., 28 Hollywood Plaza, East Orange, N. J.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
H-B Instrument Co., American & Bristol Sts., Philadelphia 40, Pa.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill.
Metals & Controls Corp., Spencer Thermostat Div., 40 Forest St., Attleboro, Mass.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis 8, Minn.
MINNEAPOLIS-HONEYWELL REGULATOR CO., INDUSTRIAL DIV., Wayne & Windrim Aves., Philadelphia 44, Pa. ADV. PG. Fourth Cover
Partlow Corp., The, Dept. NBG-58, New Hartford, N. Y.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Stevens Mfg., Co., Inc., P. O. Annex 1007, Mansfield, Ohio
Townson & Mercer, Ltd., Croydon, Surrey, England
Ulanet Co., George, 413 Market St., Newark 5, N. J.
United Aircraft Products, Inc., 1116 Bolander, Dayton, Ohio
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 65-66, 168, 169
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

THICKNESS GAGES

See GAGES—Thickness or Density, Radioactivity
GAGES—Thickness, Nonradioactivity

TIMERS—Automatic Reset

Advanced Products Co., 59 Broadway, North Haven, Conn.
Alden Electronic & Impulse Recording Equipment Co., Westboro, Mass.
Amglo Corp., 4333 Ravenswood Ave., Chicago 13, Ill.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Canadian Applied Research, Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cramer Controls Corp., Box 83, Centerbrook, Conn.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Dietz Co., Henry G., 12-16 Astoria Blvd., Long Island 2, N. Y.
Eagle Signal Corp., 202 20th St., Moline, Ill.
Electronic Processes Corp., 2190 Folsom St., San Francisco 10, Calif.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Farmer Electric Products Co., Inc., 2300 Washington St., Newton Lower Falls, Mass.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Haydon Co., A. W., The, 232 N. Elm St., Waterbury, Conn.
Haydon Mfg. Co., 245 E. Elm St., Torrington, Conn.
Industrial Timer Corp., 1407 McCarter Highway, Newark, N. J.
International Register Co., 2620 W. Washington Blvd., Chicago 12, Ill.
Isotope Developments Ltd., Beenham Grange, Alder-Church St., New Basford, Nottingham, England
Lobgeer (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey) England
Partlow Corp., The, Dept. NBG-58, New Hartford, N. Y.
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y.
Standard Electric Time Co., 89 Logan St., Springfield 2, Mass.
Stoelting Co., C. H., 424 N. Homan Ave., Chicago 24, Ill.
Streater-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Tork Time Controls Inc., Mount Vernon, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Ulanet Co., George, 413 Market St., Newark 5, N. J.
Walkirt Co., The, 141 W. Hazel St., Inglewood 3, Calif.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

TIMERS—Electric

Abrams Instrument Corp., 600-620 E. Shiawassee St., Lansing, Mich.
Advanced Products Co., 59 Broadway, North Haven, Conn.
Alden Electronic & Impulse Recording Equipment Co., Westboro, Mass.
Alden Systems Co., Alden Research Center, Westboro, Mass.
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Amglo Corp., 4333 Ravenswood Ave., Chicago 13, Ill.
Anatron Div., Endevco Corp., 161 E. California, Pasadena, Calif.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Beisck Instrument Corp., 111-01 14th Ave., College Point, N. Y.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterburg 20, Conn.
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Canadian Applied Research, Ltd., 1500 O'Conner Drive, Toronto 16, Ontario, Canada
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Cramer Controls Corp., Box 83, Centerbrook, Conn.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
DeJur-Amsco Corp., 45-01 Northern Blvd., Long Island City 1, N. Y.
Dietz Co., Henry G., 12-16 Astoria Blvd., Long Island City 2, N. Y.
Eagle Signal Corp., 202 20th St., Moline, Ill.
Electronic Engineering Co. of California, 1601 E. Chestnut St., Santa Ana, Calif.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Farmer Electric Products Co., Inc., 2300 Washington St., Newton Lower Falls, Mass.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
General Control Company, 1200 Soldiers Field Rd., Boston 34, Mass.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Haydon Co., A. W., The, 232 N. Elm St., Waterbury, Conn.

Haydon Mfg. Co., 245 E. Elm St., Torrington, Conn.
Industrial Timer Corp., 1407 McCarter Highway, Newark, N. J.
International Register Co., 2620 W. Washington Blvd., Chicago 12, Ill.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Kahlenberg Bros. Co., 12th & Monroe Sts., Two Rivers, Wis.
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Marion Electrical Instrument Co., Greiner Field, Manchester, N. H.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Partlow Corp., The, Dept. NBG-58, New Hartford, N. Y.
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Photobell Co., Inc., 43 Vesey St., New York 7, N. Y.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Sangamo Electric Co., Electronics Div., Springfield, Ill.
Standard Electric Time Co., 89 Logan St., Springfield 2, Mass.
Stevens Mfg. Co., Inc., P. O. Annex 1007, Mansfield, Ohio
Stoelting Co., C. H., 424 N. Homan Ave., Chicago 24, Ill.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Tork Time Controls Inc., Mount Vernon, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
Ulanet Co., George, 413 Market St., Newark 5, N. J.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

TIMERS—Electronic

Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Advanced Products Co., 59 Broadway, North Haven, Conn.
Airmec, Ltd., High Wycombe, Buckinghamshire, England
Alden Electronic & Impulse Recording Equipment Co., Westboro, Mass.
Alden Systems Co., Alden Research Center, Westboro, Mass.
Allegany Instrument Co., Inc., Cumberland, Md.
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Barker & Williamson, Inc., Canal & Beaver, Bristol, Pa.
Belock Instrument Corp., 111-01 14th Ave., College Point, N. Y.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Computer-Measurements Corp., 5528 Vineland Ave., North Hollywood, Calif.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
Diamond Power Specialty Corp., Lancaster, Ohio
Eagle Signal Corp., 302 20th St., Moline, Ill.
Electronic Control Corp., 1573 E. Forest, Detroit 7, Mich.
Electronic Processes Corp., 2190 Folsom St., San Francisco 10, Calif.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Ericsson Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Former Electric Products Co., Inc., 2300 Washington St., Newton Lower Falls, Mass.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
General Control Company, 1200 Soldiers Field Rd., Boston 34, Mass.
GENERAL ELECTRIC CO., APPARATUS DALBS DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
Haydon Co., A. W., The, 232 N. Elm St., Waterbury, Conn.
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Hycon-Eastern, Inc., 75 Cambridge Parkway, Cambridge 42, Mass.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda, Md.
JORDAN ELECTRONICS A DIV. OF THE VICTOREEN INSTRUMENT CO., 3025 W. Mission Rd., Alhambra, Calif. ADV. PG. 188, 189
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Leland Instruments Ltd., 22-23 Millbank, Westminster, S. W. 1, London, England
Magne-Pulse Corp., 11 Godwin Ave., Fair Lawn, N. J.
Magnetic Instruments Co., 546 Commerce St., Thornwood, N. Y.
Measurement Engineering, Ltd., Arnprior, Ontario, Canada
Nuclear Research Applications, Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
PARSONS CO., RALPH M., ELECTRONICS DIV., 151 S. De Lacey Ave., Pasadena, Calif. ADV. PG. 47
Patterson Moos Div., Universal Winding Co., 90-28 Van Wyck Expressway, Jamaica 18, N. Y.
Paschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photobell Co., 43 Vesey St., New York 7, N. Y.
Photovolt Corp., 95 Madison Ave., New York 16, N. Y.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
RS Electronics Corp., 425 Portage Ave., Palo Alto, Calif.
Rutherford Electronics Corp., 3707 S. Robertson Blvd., Culver City, Calif.
Standard Electric Time Co., 89 Logan St., Springfield 2, Mass.
Standard Electronics Research Corp., 2 East End Ave., New York 21, N. Y.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Stoelting Co., C. H., 424 N. Homan Ave., Chicago 24, Ill.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
Tech Laboratories, Inc., Bergen & Edsall Blvds., Palisades Park, N. J.
Technical Electronics Corp., 4070 Inco Blvd., Culver City, Calif.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
Trott Electronics, Inc., 412 Smith St., Rochester 6, N. Y.
TULLAMORE ELECTRONICS LABS., 6055 S. Ashland Ave., Chicago 36, Ill. ADV. PG. 140
Ulanet Co., George, 413 Market St., Newark 5, N. J.
Vacuum Tube Products Co., Inc., 506 S. Cleveland St., Oceanside, Calif.
Walkirt Co., The, 141 W. Hazel St., Inglewood 3, Calif.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63-66, 168, 169
Wilson & Co., G. C., 1915 Eighth Ave., Huntington, W. Va.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio

TIMERS—Mechanical

Alden Electronic & Impulse Recording Equipment Co., Westboro, Mass.
Anatron Div., Endevco Corp., 161 E. California, Pasadena, Calif.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 608
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Belock Instrument Corp., 111-01 14th Ave., College Point, N. Y.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Elm Laboratories, 10 Washington Ave., Hastings-on-Hudson, N. Y.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
General Photo Products Co., Inc., 15 Summit Ave., Chatham, N. J.
Gibbs Mfg. Co., N. Main St., Janesville, Wis.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Haydon Mfg. Co., 245 E. Elm St., Torrington, Conn.
LANDIS & GYR, INC., 45 W. 45th St., New York 36, N. Y. ADV. PG. 204
Liebel-Flarsheim Co., 111 E. Amity Rd., Cincinnati 15, Ohio
Magne-Pulse Corp., 11 Godwin Ave., Fair Lawn, N. J.
Partlow Corp., The, Dept. NBG-58, New Hartford, N. Y.
Standard Electric Time Co., 89 Logan St., Springfield 2, Mass.
Telectro Industries Corp., 35-16 37th St., Long Island City 1, N. Y.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.

TIMERS—Printing, Interval

Abrams Instrument Corp., 600-620 E. Shiawassee St., Lansing, Mich.
Alden Electronic & Impulse Recording Equipment Co., Westboro, Mass.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
Computer-Measurements Corp., 5528 Vineland Ave., North Hollywood, Calif.
Cramer Controls Corp., Box 83, Centerbrook, Conn.
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
General Photo Products Co., Inc., 15 Summit Ave., Chatham, N. J.
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
MALLORY & CO., INC., P. R., 3029 E. Washington St., Indianapolis 6, Ind. ADV. PG. 8
Peerless Instrument Co., Inc., 90-15 Corona Ave., Elmhurst 73, N. Y.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.

TISSUE-EQUIVALENT MATERIALS

Markite Corp., 155 Waverly Place, New York 14, N. Y.
Trionics Corp., P. O. Box 548, Madison 1, Wis.

TONGS—Handling

See also **MANIPULATORS—Remote**

Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
ATOMIC ACCESSORIES, INC., 244-04 Jamaica Ave., Bellerose 26, N. Y. ADV. PG. 214
CENTRAL RESEARCH LABORATORIES, INC., Red Wing, Minn. ADV. PG. 9
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
E. R. D. Engineering Co., Ltd., Ipswich Rd., Slough, Buckinghamshire, England
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Falk & Co., Ltd., M., Emefco House, Bell St., Reigate (Surrey), England
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Isotope Accessories Co., Box 9534, Philadelphia 39, Pa.
Isotope Specialties Co., 170 W. Providencia, Burbank, Calif.
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
Nuclear Science Associates, 55 Manor Drive, Newark 6, N. J.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
Tewmoon & Mercer, Ltd., Croydon, Surrey, England

TOOLS—Refueling

AMF ATOMICS, A DIV. OF AMERICAN MACHINE & FOUNDRY CO., 261 Madison Ave., New York 16, N. Y. ADV. PG. 54, 55
Atkins & Merrill, Sudbury, Mass.

ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
MARVEL-SCHEBLER PRODUCTS DIV. OF BORG-WARNER CORP., Decatur, Ill. ADV. PG. 60D
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50

TRANSDUCERS—Pressure

Allegany Instrument Co., Inc., Cumberland, Md.
Anatron Div., Endevco Corp., 161 E. California, Pasadena, Calif.
Atlantic Research Corp., Electromechanical Div., Alexandria, Va.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
BJ ELECTRONICS, BORG-WARNER CORP., 3300 Newport Ave., Santa Ana, Calif. ADV. PG. 60B
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Bourns Laboratories, Inc., 6135 Magnolia Ave., Riverside, Calif.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Dietz Co., Henry G., 12–16 Astoria Blvd., Logan Island City 2, N. Y.
Dynamic Instrument Co., Inc., 28 Carlton St., Cambridge, Mass.
Edcliff Instruments, Inc., 1711 S. Mountain Ave., Monrovia, Calif.
Edison Industries, Thomas A., Instrument Div., West Orange, N. J.
Endevco Corp., 161 E. California St., Pasadena, Calif.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fairchild Controls Corp., Components Div., 225 Park Ave., Hicksville, N. Y.
Fielden Electronics Ltd., Paston Rd., Whytenshawe, Manchester, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Friez Instrument Div., Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
Genisco, Inc., 2233 Federal Ave., Los Angeles 64, Calif.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Hastings-Raydist, Inc., Newcomb Ave., Hampton, Va.
Hathaway Instrument Div., Hamilton Watch Co., 5800 E. Jewell, Denver, Colo.
Industrial Instrument Div., Mandrel Industries, Inc., 5134 Glenmont, Houston, Texas
International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Photocon Research Products, 421 N. Foothill Blvd., Pasadena 7, Calif.
Revere Corp. of America, Wallingford, Conn.
Schaevitz Engineering, P. O. Box 505, Camden 1, N. J.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Stephens Tru-Sonic Inc., 8538 Warner Drive, Culver City, Calif.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Ultradyne Engineering Labs., Inc., P. O. Box 3308, Albuquerque, N. M.

TRANSDUCERS—Temperature

See GAGES—Temperature and THERMOCOUPLES

TRANSDUCERS—Ultrasonic

Acoustica Associates, Inc., 26 Windsor Rd., Mineola, N. Y.
Alcor Instruments, Inc., 17 Industrial Ave., Little Ferry, N. J.
Atlantic Research Corp., Electromechanical Div., Alexandria, Va.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Branson Instruments, Inc., 37 Brown House Rd., Stamford, Conn.
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Curtiss-Wright Corp., Industrial & Scientific Products Div., Fairfield Rd., Caldwell Township, N. J.
DYNA-EMPIRE, INC., 1075 Stewart Ave., Garden City, N. Y. ADV. PG. 197
General Ultrasonics Co., 67 Mulberry St., Hartford 3, Conn.
Gulton Industries, Durham Ave., Metuchen, N. J.
Kidde & Co., Inc., Walter, 377 Main St., Belleville 9, N. J.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Moore Corp., John B., Box 3, Nutley, N. J.
NARDA ULTRASONICS CORP., THE, Sub. of The Narda Microwave Corp., 158 Herricks Rd., Mineola, N. Y. ADV. PG. 121
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.

TRANSFORMERS—Constant Voltage

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Airmec Ltd., High Wycombe, Buckinghamshire, England
Atlas Engineering Co., 176 Blue Hill Ave., Roxbury, Mass.
Bogen Co., David, P. O. Box 500, Paramus, N. J.
Central Transformer Co., 910 W. Jackson Blvd., Chicago 7, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Hevi-Duty Electric Co., 2040 W. Wisconsin Ave., Milwaukee 1, Wis.
Highland Engineering Co., 91 Magnolia Ave., Westbury, N. Y.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
KEPCO LABORATORIES, INC., 131–38 Sanford Ave., Flushing 55, N. Y. ADV. PG. 41
Keystone Products Co., 905–6 23rd St., Union City, N. J.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Maxson Instruments Corp., Sub. of The W. L. Maxson Corp., 47–37 Austell Place, Long Island City 1, N. Y.
Minitran Corp., 5 Oliver St., Newark 2, N. J.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Polyphase Instrument Co., East 4th St., Bridgeport, Pa.
Raytheon Mfg. Co., Commercial Equipment Div., 100 River St., Waltham, Mass.
Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.
Sorensen & Co., Inc., Richards Ave., South Norwalk, Conn.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Standard Electronics Div. of Radio Engineering Labs., Inc., 29–01 Bordun Ave., Long Island City 1, N. Y.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Thordarson-Meissner Mfg. Div., Mt. Carmel, Ill.
United Transformer Corp., 150 Varick St., New York 13, N. Y.
Utrad, Inc., 305 N. Briant St., Huntington, Ind.

TRANSFORMERS—Power

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Amp, Incorporated, Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
Atlas Engineering Co., 176 Blue Hill Ave., Roxbury, Mass.
Bogen Co., David, P. O. Box 500, Paramus, N. J.
Central Transformer Co., 910 W. Jackson Ave., Chicago, Ill.
Chicago Standard Transformer Corp., 3501 W. Addison, Chicago 18, Ill.
Del Electronics Corp., 521 Homestead Ave., Mount Vernon, N. Y.
Dietz Design & Mfg. Co., Grandview 14, Mo.
Edko Electronics Engineering Co., 202 Grand St., Brooklyn 11, N. Y.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Fisher Engineering, Inc., 2060 U. S. 24 East, P. O. Box 327, Huntington, Ind.
Fraed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
Gastin Electric & Mfg. Co., 2921 W. Olive St., Burbank, Calif.
Gramer-Halldorson Transformer Corp., 2734 N. Pulaski Rd., Chicago 39, Ill.
Grand Transformers, Inc., Grand Haven, Mich.
Hevi-Duty Electric Co., 2040 W. Wisconsin Ave., Milwaukee 1, Wis.
Highland Engineering Co., 91 Magnolia Ave., Westbury, N. Y.
Industrial Transformer Corp., Gouldsboro, Pa.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
James Vibrapower Co., 4036 N. Rockwell St., Chicago 18, Ill.
K-V Transformer Co., 20 E. Franklin St., Danbury, Conn.
KEPCO LABORATORIES, INC., 131–38 Sanford Ave., Flushing 55, N. Y. ADV. PG. 41
Keystone Products Co., 904–6 23rd St., Union City, N. J.
King Electric Equipment Co., 9123 Inman Ave., Cleveland 5, Ohio
Knopp, Inc., 1307 66th St., Emeryville 8, Calif.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 15, Mass.
Lavoie Laboratories Inc., Matawan-Freehold Rd., Morganville, N. J.
Lee Electric & Mfg. Co., 2806 Clearwater St., Los Angeles 39, Calif.
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Magnatran, Inc., P. O. Box 211, Kearny, N. J.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Maxson Instruments Corp., Sub. of The W. L. Maxson Corp., 47–37 Austell Place, Long Island City 1, N. Y.
Minitran Corp., 5 Oliver St., Newark 2, N. J.
Moloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
N. J. E. Corp., 345 Carnegie Ave., Kenilworth, N. J.
New London Instrument Co., P. O. Box 189, New London, Conn.
New York Transformer Co., Inc., Third Ave., Alpha, N. J.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Polyphase Instrument Co., East 4th St., Bridgeport, Pa.
Radio Development & Research Corp., 100 Pennsylvania Ave., Paterson 3, N. J.
Raypar, Inc., 7800 W. Addison St., Chicago 34, Ill.
Raytheon Mfg. Co., Commercial Equipment Div., 100 River St., Waltham, Mass.
Standard Electronics Div. of Radio Engineering Labs., Inc., 29–01 Borden Ave., Long Island City 1, N. Y.
Sterling Transformer Corp., 397 N. Seventh St., Brooklyn 11, N. Y.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 N. Goodman St., Rochester 9, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island City 1, N. Y.
Thordarson-Meissner Mfg. Div., Mt. Carmel, Ill.
Torwico Electronics, Inc., 1090 Morris Ave., Union, N. J.
Transformers, Inc., 200 Stage Rd., Vestal, N. Y.
Transonic, Inc., 808 Sixteenth St., Box 96A, Bakersfield, Calif.
Tresco, Inc., 3824 Terrace St., Philadelphia 28, Pa.
Triad Transformer Corp., 4055 Redwood Ave., Venice, Calif.
United Transformer Corp., 150 Varick St., New York 13, N. Y.
Utrad, Inc., 305 N. Briant St., Huntington, Ind.
Vare Mfg. Co., Inc., 2201 Walnut St., Garland, Texas
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 91, Conn.

TRANSFORMERS—Pulse

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.
Airpax Products Co., Middle River, Baltimore 20, Md.
Amp, Incorporated, Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60
Atlas Engineering Co., 176 Blue Hill Ave., Roxbury, Mass.
Barber & Williamson, Inc., Canal & Beaver, Bristol, Pa.
Berkshire Laboratories, 588 Bank Village, Greenville, N. H.
Brow & Co., Inc., Richard D., Airport Rd., Box 339, Concord, N. H.
Chicago Standard Transformer Corp., 3501 W. Addison, Chicago 18, Ill.
Communication Accessories Co., Lee's Summit, Mo.
Dietz Design & Mfg. Co., Grandview 14, Mo.
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109

E S C Corp., 534 Bergen Blvd., Palisades Park, N. J.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Essex Electronics, Springfield Ave., Berkeley Heights, N. J.
Fisher Engineering, Inc., 2060 U. S. 24 East, P. O. Box 327, Huntington, Ind.
Freed Transformer Co., Inc., 1736 Weirfield St., Brooklyn 27, N. Y.
Gastin Electric & Mfg. Co., 2921 W. Oliver St., Burbank, Calif.
Gramer-Halldorson Transformer Corp., 2734 N. Pulaski Rd., Chicago 39, Ill.
Gudeman Co., 340 W. Huron St., Chicago 10, Ill.
Industrial Transformer Corp., Gouldsboro, Pa.
International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.
Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda, Md.
K-V Transformer Co., 20 E. Franklin St., Danbury, Conn.
Keystone Products Co., 904–6 23rd St., Union City, N. J.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Lavoie Laboratories, Inc., Matawan-Freehold Rd., Morganville, N. J.
LEVINTHAL ELECTRONIC PRODUCTS, INC., Stanford Industrial Park, Palo Alto, Calif. ADV. PG. 190
Magnavox Co., Fort Wayne, Ind.
Maxson Instruments Corp., Sub. of The W. L. Maxson Corp., 47–37 Austell Place, Long Island City 1, N. Y.
Maloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.
New London Instrument Co., P. O. Box 189, New London, Conn.
New York Transformer Co., Inc., Third Ave., Alpha, N. J.
North Hills Electric Co., Inc., 402 Sagamore Ave., Mineola, N. Y.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
PCA Electronics, Inc., 16799 Schoenborn St., Sepulveda, Calif.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Polyphase Instrument Co., East 4th St., Bridgeport, Pa.
Pulse Engineering, 2657 Spring St., Redwood City, Calif.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
Raytheon Mfg. Co., Commercial Equipment Div., 100 River St., Waltham, Mass.
Redmon Electronics Corp., P. O. Box 72, Thompsonville, Conn.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Sprague Electric Co., North Adams, Mass.
Standard Electronics Div. of Radio Engineering Labs., Inc., 29–01 Borden Ave., Long Island City 1, N. Y.
Sterling Transformer Corp., 297 N. Seventh St., Brooklyn 11, N. Y.
Technitrol Engineering Corp., Emerald St. & Allegheny Ave., Philadelphia 34, Pa.
Thordarson-Meissner Mfg. Div., Mt. Carmel, Ill.
Transformers, Inc., 200 Stage Rd., Vestal, N. Y.
Transonic, Inc., 808 Sixteenth St., Box 96A, Bakersfield, Calif.
Tresco, Inc., 3824 Terrace St., Philadelphia 28, Pa.
Triad Transformer Corp., 4025 Redwood Ave., Venice, Calif.
United Transformer Corp., 150 Varick St., New York 13, N. Y.
Utrad, Inc., 305 N. Briant St., Huntington, Ind.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 91, Conn.

TRANSFORMERS—Variable

Acme Electric Corp., 31 Water St., Cuba, N. Y.
Airmec, Ltd., High Wycombe, Buckinghamshire, England
Atlas Engineering Co., 176 Blue Hill Ave., Roxbury, Mass.
Automatic Timing & Controls Inc., King of Prussia, Pa.
Barker & Williamson, Inc., Canal & Beaver, Bristol, Pa.
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass.
Chicago Standard Transformer Corp., 3501 W. Addison, Chicago 18, Ill.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Gramer-Halldorson Transformer Corp., 2734 N. Pulaski Rd., Chicago 39, Ill.
Gudeman Co., 340 W. Huron St., Chicago 10, Ill.
Hevi-Duty Electric Co., 2040 W. Wisconsin Ave., Milwaukee 1, Wis.
Highland Engineering Co., 91 Magnolia Ave., Westbury, N. Y.
Keystone Products Co., 904–6 23rd St., Union City, N. J.
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Ohmite Mfg. Co., 3601 Howard St., Skokie, Ill.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Raytheon Mfg. Co., Nuclear Power Group, 28 Sayon St., Waltham 54, Mass.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Standard Electronics Div. of Radio Engineering Labs., Inc., 29–01 Borden Ave., Long Island City 1, N. Y.
Stromberg-Carlson Div., General Dynamics Corp., Industrial Products Dept., 1400 W. Goodman St., Rochester 9, N. Y.
Superior Electric Co., 83 Laurel St., Bristol, Conn.
Thordarson-Meissner Mfg. Div., Mt. Carmel, Ill.
United Transformer Co., 150 Varick St., New York 13, N. Y.

TRANSISTORS

Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
CBS-Hytron, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass.
Clevite Transistor Products, A Div. of The Clevite Corp., 241–257 Crescent St., Waltham 54, Mass.
General Electric Co., Semiconductor Products Dept., Electronics Park, Syracuse N. Y.
GENERAL TRANSISTOR CORP., 91–27 138th Place, Jamaica 35, N. Y. ADV. PG. 131
Hughes Products, Los Angeles 45, Calif.
Industro Transistor Corp., 649 Broadway, New York 12, N. Y.
Lansdale Tube Co., Div. of Philco Corp., Lansdale, Pa.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Motorola Communications & Electronics, Inc., 4545 W. Augusta Blvd., Chicago 51, Ill.
Motorola, Inc., Semiconductor Products Div., 5005 E. McDowell Rd., Phoenix, Ariz.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Radio Corporation of America, Tube Div., 415 S. Fifth St., Harrison, N. J.
Radio Development & Research Corp., 100 Pennsylvania Ave., Paterson 3, N. J.
Raytheon Mfg. Co., Receiving & Cathode Ray Tube Operations, 55 Chapel St., Newton 58, Mass.
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
Sarkes Tarzian, Inc., 415 N. College Ave., Bloomington, Ind.
Sprague Electric Co., North Adams, Mass.
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.
Texas Instruments Incorporated, 6000 Lemmon Ave., Dallas 9, Texas
Transitron Electronics Corp., 168 Albion St., Wakefield, Mass.
Tung Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169

TUBE FITTINGS

See PIPE FITTINGS

TUBES—Electron

See also G-M TUBES

a. Beam Switching
b. Cathode Ray
c. Cold Cathode, Special Purpose
d. Electrometer
e. Glow Transfer
f. Ignitron
g. Microwave
h. Photomultiplier
i. Power
j. Receiving
k. Rectifying
l. Thyratron
m. Voltage Regulating
n. X-Ray

Amglo Corp., 4333 Ravenswood Ave., Chicago 13, Ill. c
Amperex Electronic Corp., 230 Duffy Ave., Hicksville N. Y. a-c-f-g-i-j-k-l-m-n
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139 m
APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60 g-n
Atomic Laboratories, 3086 Claremont Ave., Berkeley, Calif. n
BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover c-e
Bomac Laboratories, Inc., Salem Rd., Beverly, Mass. g
Bracke-Seib X-Ray Co., Inc., 16 Pelham Bay Park W., Pelham Manor N. Y. n
Burroughs Corp., Electronic Tube Div., P. O. Box 1226, Plainfield, N. J. a-c
CBS-Hytron, A Div. of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass. b-i-j-k-m
Cascade Research Corp., 53 Victory Lane, Los Gatos, Calif. g
Central Electronic Manufacturers, Inc., 2 Richwood Place, Danville, N. J. g-i-k-m
Chatham Electronics Div. of Tung-Sol Electric Inc., Livingston, N. J. c-i-j-k-l-m
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England b-k
Diamond Power Specialty Corp., Lancaster, Ohio h
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109 a-b-h-i-l
Edgerton, Germeshausen & Grier, Inc., 160 Brookline Ave., Boston 15, Mass. b-i
Eitel-McCullough, Inc., San Bruno, Calif. a-g-i-j-k-l
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y. c-m
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa. b
Electrons, Inc., 127 Sussex Ave., Newark 3, N. J. k-l
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England g
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England c-e
Farnsworth Electronics Co., Div. of IT&T, Fort Wayne, Ind. b-c-h
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y. b-c-d-g-n
Fredericks Co., George E., Bethayres, Pa. c
Geisler Laboratories, P. O. Box 252, Menlo Park, Calif. g-i
General Electric Co., Electronic Components Div., Owensboro, Ky. a-b-c-d-f-g-h-i-j-k-l-m
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England k-n
Heiady Electronics Co., 87 William St., New York 5, N. Y. c
Huggins Laboratories, Inc., 711 Hamilton Ave., Menlo Park, Calif. g
Hughes Products, Los Angeles 45, Calif. b-g
Industrial Tubes, 321 Stevens St., Geneva, Ill. i-k-l
International Telephone & Telegraph Corp., Components Div., Federal Tubes, 100 Kingsland Rd., Clifton, N. J. g-i-k
Keystone Electronics Co., 65 7th Ave., Newark, N. J. i-k
Kip Electronics Corp., 29 Holly Place, Box 563, Stamford, Conn. c-e-l
Kuthe Laboratories, Inc., 730 S. 13th St., Newark, N. J. c-k-l
Lansdale Tube Co., Div. of Philco Corp., Lansdale, Pa. b-c-j-m
Landsverk Electrometer Co., 550–552 W. Garfield Ave., Glendale 4, Calif. d
Lewis & Kaufman Ltd., 17320 El Rancho Ave., P. O. Box 337, Los Gatos, Calif. g-i-k
Machlett Laboratories, Inc., 1063 Hope St., Springdale, Conn. b-i-k-n
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England n
National Union Electric Corp., Electronics Div., Bloomington, Ill. a-b-e
Nuclear Corp. of America Inc., 400 Park Ave., New York 17, N. Y. c-d-g-i-k-l-m
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56 b-c-d-e-f-g-h-i-j-k-l-m-n
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142 n
Polarad Electronics Corp., 43–20 34th St., Long Island City 1, N. Y. g
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29 h
Radio Corporation of America, Tube Div., 415 S. Fifth St., Harrison, N. J. b-c-e-f-g-h-i-j-k-l-m
Raytheon Mfg. Co., Microwave & Power Tube Operations, Foundry Ave., Waltham, Mass. g-l
Raytheon Mfg. Co., Receiving & Cathode Tube Operations, 55 Chapel St., Newton 58, Mass. b-c-d-g-i-k-l-m
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J. c-g-i-k-l-m
Resitron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif. b-c-k-n
Salus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England k-n
Sperry Gyroscope Div. of Sperry-Rand Corp., Great Neck, N. Y. g
Stewart Engineering Co., P. O. Box 277, Soquel, Calif. g
Superior Electric Co., 83 Laurel St., Bristol, Conn. m
Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y. a-b-c-e-g-h-i-k-m
Taylor Tubes, Inc., 6 N. Michigan Ave., Chicago 2, Ill. i-k-l
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50 k-l-n
Tung-Sol Electric, Inc., 95 Eighth Ave., Newark 4, N. J. b-c-h-i-j-k-l-m
Twentieth Century Electronics Ltd., Centronics Works, King Henry's Drive, New Addington, Surrey, England b-h
Vacuum Tube Products Co., Inc., 506 S. Cleveland St., Oceanside, Calif. a-b-k-l
Varian Associates, 611 Hansen Way, Palo Alto, Calif. g
VICTOREEN INSTRUMENT CO., 5806 Hough Ave., Cleveland 3, Ohio. ADV. PG. 166, 167 d-m
Waterman Products Co., Inc., 2445–63 Emerald St., Philadelphia 25, Pa. b
WESTINGHOUSE ELECTRIC CORP., ELECTRONIC TUBE DIV., Box 284, Elmira, N. Y. ADV. PG. 113 b-f-g-i-j-k-l

X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis. b-k-n

TUBING—Carbon

Smith Tube Corp., 45 N. Broad St., Ridgewood, N. J.

TUBING—Ceramic

ALITE DIV. OF U. S. STONEWARE CO., P. O. Box 119, Orville, Ohio. ADV. PG. 49
AMERICAN LAVA CORP., STEATITE DIV., Manufacturers Rd., Chattanooga 5, Tenn. ADV. PG. 52
Bettinger Corp., Waltham, Mass.
Evans Pipe Co., The, 23 NewPort Ave., Uhrichsville, Ohio
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
General Ceramics Corp. 250 Crows Mill Rd., Keasbey, N. J.
Isolantite Mfg. Corp., Stirling, N. J.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Logan Clay Products Co., Box 698, Logan, Ohio
Louthan Mfg. Co., East Liverpool, Ohio
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Porcelain Products, Inc., 422 W. Sandusky St., Findlay, Ohio
Robinson Clay Products Co., The, 65 W. State St., Akron 9, Ohio
U. S. Stoneware Co., Akron 9, Ohio

TUBING—Glass

Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
Phoenix Precision Instrument Co., 3803-05 North 5th St., Philadelphia, Pa.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.

TUBING—Hard-Rubber

Goodyear Tire & Rubber Co., Akron, Ohio
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.

TUBING—Metal

ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
All Stainless Inc., 36 Rugg Road, Allston 34, Mass.
American Brass Co., Waterbury 20, Conn.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
BABCOCK & WILCOX CO., TUBULAR PRODUCTS DIV., Beaver Falls, Pa. ADV. PG. 71
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Bishop & Co., J., Platinum Works, Malvern, Pa.
BLAW-KNOX CO., CHEMICAL PLANT DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Curtiss-Wright Co., Metal Processing Div., 760 Northland Ave., Buffalo, N. Y.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Duriron Co., Inc., 450 N. Findlay St., Dayton, Ohio
General Alloys Co., 405 W. First St., Boston 27, Mass.
Glaser Lead Co., Inc., 31 Wyckoff Ave., Brooklyn 37, N. Y.
Haynes Stellite Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York, N. Y.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Mallory-Schwarzkopf Metals, Inc., 320 Yonkers Ave., Yonkers, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
PACIFIC COAST ENGINEERING CO., Oak & Clement Sts., Alameda, Calif. ADV. PG. 116
PERFECTION MICA CO., MAGNETIC SHIELD DIV., 1322 N. Elston Ave., Chicago 22, Ill. ADV. PG. 109
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22, N. Y.
Republic Steel Corp., 3100 E. 45th St., Cleveland 27, Ohio
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Ryerson & Son, Inc., Joseph T., P. O. Box 8000-A, Chicago, Ill.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
Stroud Products Corp., P. O. Box 447, Gadsden, Ala.
Superior Tube Co., Box 191, Norristown, Pa.
Swepco Tube Corp., 1 Clifton Blvd., Clifton, N. J.
Titeflex, Inc., 502 Hendee St., Springfield 4, Mass.
U. S. PIPE & FOUNDRY CO., Burlington, N. J. ADV. PG. 12, 13
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.

TUBING—Plastic

Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Allied Resineus Products Inc., Box 620, Conneaut, Ohio
All-Stainless Inc., 36 Rugg Road, Allston 34, Mass.
American Aglio Corp., P. O. Box 168, Bedford, Ohio
Anchor Plastics Co., Inc., 36-36 36th St., Long Island City 6, N. Y.
Anesite Co., 3575 Touhy Ave., Chicago 45, Ill.
Chicago Gasket Co., 1271 W. North Ave., Chicago 22, Ill.
Continental-Diamond Fibre Corp., Newark, Delaware
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. ADV. PG. 58
Dore, Inc., John L., 5408 Schuler St., Houston, Texas
Evans Pipe Co., The, 23 NewPort Ave., Uhrichsville, Ohio
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Haveg Industries, Inc., Halocarbon Div., 950 Greenbank Rd., Wilmington 8, Del.
Houghton Laboratories, Inc., Houghton Ave., Olean, N. Y.
Irvington Varnish & Insulator Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Markel & Sons, L. Frank, School House Lane, Norristown, Pa.
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Otis Gasket & Rubber Co., Andrew, 231-233 W. Court St., Cincinnati 2, Ohio
Polymer Corp., The, Reading, Pa.
Republic Steel Corp., 3100 E. 45th St., Cleveland 27, Ohio
Resdel Corp., P. O. Box 217, Rio Grande, N. J.
Resistoflex Corp., Roseland, N. J.
Rex Corp., The, Hayward Rd., West Acton, Mass.
Richardson Company, The, 2775 Lake St., Melrose Park, Ill.
Ryerson & Son, Inc., Joseph T., P. O. Box 8000-A, Chicago, Ill.
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.
Titeflex, Inc., 502 Hendee St., Springfield 4, Mass.
U. S. Gasket Co., 600 N. 10th St., Camden 1, N. J.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.
Walworth Co., 60 E. 42nd St., New York 17, N. Y.
Westlake Plastics Co., West Lenni Rd., Lenni Mills, Pa.

TUBING—Rubber

Connecticut Hard Rubber Co., New Haven 9, Conn.
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Otis Gasket & Rubber Co., Andrew, 231-233 W. Court St., Cincinnati 2, Ohio
Roberts Toledo Rubber Co., 1200 Prospect & M.C.R.R., Toledo 6, Ohio
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.

TUBING—Seamless, Stainless

Allegheny Ludlum Steel Corp., Oliver Bldg., Room 2020, Pittsburgh 22, Pa.
All-Stainless Inc., 36 Rugg Rd., Allston 34, Mass.
American Brass Co., Waterbury 20, Conn.
Attalla Pipe & Foundry Co., Inc., P. O. Box 211, Attalla, Ala.
BABCOCK & WILCOX CO., THE, 161 E. 42nd St., New York 17, N. Y. ADV. PG. 48
BABCOCK & WILCOX CO., TUBULAR PRODUCTS DIV., Beaver Falls, Pa. ADV. PG. 71
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
Curtiss-Wright Co., Metal Processing Div., 760 Northland Ave., Buffalo, N. Y.
Fluor Products Co., 1200 E. Washington Blvd., Whittier, Calif.
Knapp Mills, Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Mackenzie Welton Corp., 478 Pawtucket Ave., Pawtucket, R. I.
Pittsburgh Piping & Equipment Co., 158 49th St., Pittsburgh, Pa.
Republic Steel Corp., 3100 E. 45th St., Cleveland 27, Ohio
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Ryerson & Son, Inc., Joseph T., P. O. Box 8000-A, Chicago, Ill.
Smith Tube Corp., 45 N. Broad St., Ridgewood, N. J.
Tube Reducing Corp., 520 Main Ave., Wallington, N. J.
U. S. PIPE & FOUNDRY CO., Burlington, N. J. ADV. PG. 12, 13
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.

TUBING—Welded, Stainless

Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Smith Tube Corp., 45 N. Broad St., Ridgewood, N. J.

TURBINES—Gas
TURBINES—Steam

See POWER PLANT EQUIPMENT

ULTRASONIC EQUIPMENT

Acoustica Associates, Inc., 26 Windsor Rd., Mineola, N. Y.
Alcar Instruments, Inc., 17 Industrial Ave., Little Ferry, N. J.
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Arenberg Ultrasonic Lab., Inc., 94 Green St., Jamaica Plain 30, Mass.
Atlantic Research Corp., Electromechanical Div., Alexandria, Va.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Branson Instruments, Inc., 37 Brown House Rd., Stamford, Conn.
BRANSON ULTRASONIC CORP., 1 Brown House Rd., Stamford, Conn. ADV. PG. 180
Curtiss-Wright Corp., Industrial & Scientific Products Div., Fairfield Rd., Caldwell Township, N. J.
D & R, Ltd., 402 E. Gutierrez St., Santa Barbara, Calif.
Dawe Instruments Ltd., 99 Oxbridge Road, Ealing, London W5, England
DYNA-EMPIRE, INC., 1075 Stewart Ave., Garden City, N. Y. ADV. PG. 197
Falk & Co., Ltd., M., Emefco House, Bell St., Reigate (Surrey), England
Freed Transformer Co., Inc., 1726 Weirfield St., Brooklyn 27, N. Y.
General Nuclear Corp., 550 Fifth Ave., New York 36, N. Y.
General Ultrasonics Co., 67 Mulberry St., Hartford 3, Conn.
Gulton Industries, Durham Ave., Metuchen, N. J.
Hariss, Granta Terrace, Stapleford, Cambridge, England
Kidde & Co., Inc., Walter, 377 Main St., Belleville 9, N. J.
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill.
McKenna Laboratories, 2583 Main St., Santa Monica, Calif.
MAGNAFLUX CORP., 7346 W. Lawrence Ave., Chicago 31, Ill. ADV. PG. 118
Minneapolis-Honeywell Regulator Co., Ordnance Div., 600 2nd St., Hopkins, Minn.
Moore Corp., John B., Box 3, Nutley 10, N. J.
NARDA ULTRASONICS CORP., THE, Sub. of The Narda Microwave Corp., 158 Herricks Rd., Mineola, N. Y. ADV. PG. 121
New Hermes Engraving Machine Corp., 13-19 University Place, New York 3, N. Y.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Photocon Research Products, 421 N. Foothill Blvd., Pasadena 7, Calif.
Pioneer Central Division, Bendix Aviation Corp., Davenport, Iowa
Raytheon Mfg. Co., Commercial Equipment Div., 100 River St., Waltham, Mass.
Scientific Electric Corp., 105-119 Monroe St., Garfield, N. J.
Solus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
Sorensen & Co., Inc., Richards Ave., South Norwalk, Conn.
SPELLMAN TELEVISION CO., INC., 3029 Webster Ave., Bronx 67, N. Y. ADV. PG. 202
Sperry Products, Inc., Danbury, Conn.
Standard Electronics Div. of Radio Engineering Labs. Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.

URANIUM

See METALS & ALLOYS and FUEL ELEMENTS—Nuclear

URANIUM—Enriched

See METALS & ALLOYS

URINALYSIS

See SERVICES

VACUUM EQUIPMENT & ACCESSORIES

See also DETECTORS—Leak; FURNACES—Vacuum; VALVES—Vacuum

Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
Associated Engineering & Mfg. Corp., Glen Ridge, N. J.
Beach-Russ Co., 50 Church St., New York 7, N. Y.
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
Brewer Electric Mfg. Co., 5100 N. Ravenswood Ave., Chicago 40, Ill.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Consolidated Electrodynamics Corp., Rochester Div., 1775 Mt. Read Blvd., Rochester, N. Y.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
Electronics Research Labs., 85 Surrey St., Brighton 35, Mass.
Fredericks Co., George E., Bethayres, Pa.
Hastings-Raydist, Inc., Newcomb Ave., Hampton, Va.
High Vacuum Equipment Corp., 2 Churchill Rd., Hingham, Mass.
International Pump & Machine Works, 81 Dorse Ave., Livingston, N. J.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
Kinetics Corp., 2 Churchill Rd., Hingham, Mass.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
Kontes Glass Co., Dept. P–139, Vineland, N. J.
L&B Welding Equipment, Inc., 2424 6th St., Berkeley, Calif.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Litton Engineering Labs., P. O. Box 949, Grass Valley, Calif.
Mallory-Schwarzkopf Metals Inc., 320 Yonkers Ave., Yonkers, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
NRC EQUIPMENT CORP., A SUB. OF NATIONAL RESEARCH CORP., 87 Charlement St., Newton Highlands 61, Mass. ADV. PG. 32
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Research Vacuum Supply Co., 6712 N. Clark St., Chicago, Ill.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
SCIENTIFIC ENGINEERING LABORATORY, 2229 McGee Ave., Berkeley, Calif. ADV. PG. 198
Salus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
Steiner-Ives Co., Springfield Rd., Union, N. J.
STOKES CORP., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 132
Vacuum Equipment Div. of The New York Air Brake Co., Admiral Wilson Blvd., Camden, N. J.
Vacuum Industrial Applications, Ltd., Netherton Rd., Wishaw, Lanarkshire, Scotland
Vacuum Specialties Co., Inc., 34 Linden St., Somerville, Mass.
Vacuum Tube Products Co., Inc., 506 S. Cleveland St., Oceanside, Calif.
Veeco Vacuum Corp., 86 Denton Ave., New Hyde Park, N. Y.
Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
WHEELER MFG. CO., C. H., 19th & Lehigh, Philadelphia 32, Pa. ADV. PG. 112

VACUUM MELTED METALS

See METALS—Vacuum Melted

VACUUM PUMPS

See PUMPS—Vacuum

VALVES—Bellows Seal & Accessories

Alloy Steel Products Co., 1329 W. Elizabeth Ave., Linden, N. J.
Annin Co., The, Div. of The Annin Corp., 6570 Telegraph Rd., Los Angeles 22, Calif.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Copes-Vulcan Div. of Blaw-Knox Co., 939 W. 26th St., Erie, Pa.
CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. ADV. PG. 58
Dahl Co., Inc., G. W., Tupelo St., Bristol, R. I.
Farris Engineering Co., 400 Commercial Ave., Palisades Park, N. J.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Hammel-Dahl Co., Warwick Industrial Park, Providence 5, R. I.
HOKE, INC., 233 S. Dean St., Englewood, N. J. ADV. PG. 200
Kinney & Mueller Co., Inc., Genung St., Middletown, N. Y.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Powell Co., Wm., The, Cincinnati 22, Ohio
Vacuum Equipment Div. of The New York Air Brake Co., Admiral Wilson Blvd., Camden, N. J.
Vacuum Industrial Applications, Ltd., Netherton Rd., Wishaw, Lanarkshire, Scotland
Veeco Vacuum Corp., 86 Denton Ave., New Hyde Park, N. Y.
Velan Valve Corp., 37 S. River St., Plattsburg, N. Y.
Westinghouse Electric Corp., Atomic Equipment Div., Cheswick, Pa.

VALVES—Butterfly

Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
B-I-F Industries, Inc., 530-D Harris Ave., Providence 1, R. I.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Davis Regulator Co., 2539 S. Wahtenaw, Chicago 2, Ill.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fisher Governor Co., Marshalltown, Iowa
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
LADISH CO., 5458 S. Packard Ave., Cudahy, Wis. ADV. PG. 8A–8E
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Powell Co., Wm., The, Cincinnati 22, Ohio
PRATT CO., HENRY, 2222 S. Halsted St., Chicago, Ill. ADV. PG. 70
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Smith Co., S. Morgan, York, Pa.
United Aircraft Products, Inc., 1116 Belander, Dayton, Ohio
Vacuum Industrial Applications, Ltd., Netherton Rd., Wishaw, Lanarkshire, Scotland
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

VALVES—Canned Rotor

Westinghouse Electric Corp., Atomic Equipment Div., Cheswick, Pa.
WHEELER MFG. CO., C. H., 19th & Lehigh, Philadelphia 32, Pa. ADV. PG. 112

VALVES—Control

Aerco Corp., Paris Ave., P. O. Box 248, Northvale, N. J.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
Alloy Steel Products Co., 1329 W. Elizabeth Ave., Linden, N. J.
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Annin Co., The, Div. of The Annin Corp., 6570 Telegraph Rd., Los Angeles 22, Calif.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Atlas Valve Co., 280 South St., Newark 5, N. J.
Automatic Switch Co., Hanover Rd., Florham Park, N. J.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cash Valve Mfg. Corp., A. W., 666 E. Wabash Ave., Decatur, Ill.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Controls Co. of America, 2450 N. 32nd St., Milwaukee 45, Wis.
Copes-Vulcan Div. of Blaw-Knox Co., 939 W. 26th St., Erie, Pa.
Dahl Co., Inc., G. W., Tupelo St., Bristol, R. I.
Davis Regulator Co., 2539 W. Wahtenaw, Chicago 2, Ill.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Edward Valves, Inc., 1200 W. 145th St., East Chicago, Ind.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fairbanks Co., The, 393 Lafayette St., New York 3, N. Y.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Iowa
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
Greer Hydraulics, Inc., International Airport, Jamaica 30, N. Y.
Hamer Valves, Inc., 2919 Gardenia Ave., Long Beach 6, Calif.
Hammel-Dahl Co., Warwick Industrial Park, Providence 5, R. I.
Hanna Engineering Works, 1767 N. Elston Ave., Chicago 22, Ill.
Hannifin Corp., 619D S. Wolf Rd., Des Plaines, Ill.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.
Jamesbury Corp., 45 New St., Worcester 5, Mass.
Johnson Corp., 809 Wood St., Three Rivers, Mich.
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Jordan Corp., Div. of OPW Corp., 6013 Wiehe Rd., Cincinnati 13, Ohio
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
Keckley Co., O. C., 3400 Cleveland St., Skokie, Ill.
Kinney & Mueller Co., Inc., Genung St., Middletown, N. Y.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Lunkenheimer Co., The, Beekman St., & Waverly Ave., Cincinnati 14, Ohio
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Nahatan St., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Okadee Valve Co., 332 S. Michigan Ave., Chicago 4, Ill.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Partlow Corp., The, Dept. NBG–58, New Hartford, N. Y.
Powell Co., Wm., The, Cincinnati 22, Ohio
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
R-P & C Valve Div., American Chain & Cable Co., Inc., Tulpehocken & Lebanon Valley Rd., Reading, Pa.
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Robbins Aviation, 1735 W. Florence Ave., Los Angeles 47, Calif.
Ruggles-Klingemann Mfg. Co., Salem, Mass.
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Sarco Co., Inc., 350 Fifth Ave., New York 1, N. Y.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Smith Co., S. Morgan, York, Pa.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Stow Mfg. Co., 355 Shear St., Binghamton, N. Y.
Sunstrand-Denver Div. of Sunstrand Machine Tool, Denver, Colo.
United Aircraft Products, Inc., 1116 Belander, Dayton, Ohio
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Velan Valve Corp., 37 S. River St., Plattsburg, N. Y.
Walworth Co., 60 E. 42nd St., New York 17, N. Y.
Waterman Engineering Co., 725 Custer Ave., Evanston, Ill.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Westinghouse Electric Corp., Atomic Equipment Div., Cheswick, Pa.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.

VALVES—Corrosion Resistant

ALCO PRODUCTS, INC., 30 Church St., New York 8, N. Y. ADV. PG. 115
Alloy Flange & Fitting Corp., 222 Eagle St., Brooklyn, N. Y.
Alloy Steel Products Co., 1329 W. Elizabeth Ave., Linden, N. J.
All-Stainless Inc., 36 Rugg Rd., Allston 34, Mass.
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Associated Valve & Engineering Co., 1150 Marquette Rd., Chicago 21, Ill.

Attalla Pipe & Foundry Co., Inc., P. O. Box 211, Attalla, Ala.
Autoclave Eng. Sales Corp., 2930 W. 22nd St., Erie, Pa.
Automatic Switch Co., Hanover Rd., Florham Park, N. J.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Barnstead Still & Sterilizer Co., 84 Lanesville Terrace, Boston 31, Mass.
Cameron Iron Works, P. O. Box 1212, Houston, Texas
Carpenter Valves Corp., 6723 Denison Ave., Cleveland 2, Ohio
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Controls Co. of America, 2450 N. 32nd St., Milwaukee 45, Wis.
Cooper Alloy Corp., Blay St. & Ramsey Ave., Hillside, N. J.
Copes-Vulcan Div. of Blaw-Knox Co., 939 W. 26th St., Erie, Pa.
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. ADV. PG. 58
Dahl Co., Inc., G. W., Tupelo St., Bristol, R. I.
Durinon Co., Inc., 450 N. Findley St., Dayton, Ohio
Edward Valves, Inc., 1200 W. 145th St., East Chicago, Ind.
Farris Engineering Co., 400 Commercial Ave., Palisades Park, N. J.
General Alloys Co., 405 W. First St., Boston 27, Mass.
Grinnell Corp., 260 W. Exchange St., Providence 1, R. I.
Hammel-Dahl Co., Warwick Industrial Park, Providence 5, R. I.
Hanna Engineering Works, 1767 N. Elston Ave., Chicago 22, Ill.
Hills McCanna Co., 2395 W. Nelson St., Chicago, Ill.
HOKE, INC., 233 S. Dean St., Englewood, N. J. ADV. PG. 200
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
Jamesbury Corp., 45 New St., Worcester 5, Mass.
Johnson Corp., 809 Wood St., Three Rivers, Mich.
Jordan Corp., Div. of OPW Corp., 6013 Wiehe Rd., Cincinnati 13, Ohio
Kieley & Mueller Co., Inc., Genung St., Middletown, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Laurence Co., Inc., R. G., 134 Summit St., Tenafly, N. J.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Lunkenheimer Co., The, Beekman St. & Waverly Place, Cincinnati 14, Ohio
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Manning, Maxwell & Moore, Inc., Strafford, Conn.
Marine & Industrial Products Co., 1150 W. Marquette Blvd., Chicago 21, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
National Lead Co., 111 Broadway, New York 6, N. Y.
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Okadee Valve Co., 332 S. Michigan Ave., Chicago 4, Ill.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Powell Co., Wm., The, Cincinnati 22, Ohio
R-P & C Valve Div., American Chain & Cable Co., Inc., Tulpehocken & Lebanon Valley Rd., Reading, Pa.
Robbins Aviation, 1735 W. Florence Ave., Los Angeles 47, Calif.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Smith Co., S. Morgan, York, Pa.
United Aircraft Products, Inc., 1116 Balander, Dayton, Ohio
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
U. S. Stoneware Co., Akron 9, Ohio
Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.
Velan Valve Corp., 37 S. River St., Plattsburg, N. Y.
Walworth Co., 60 E. 42nd St., New York 17, N. Y.
Westinghouse Electric Corp., Atomic Equipment Div., Cheswick, Pa.
WHEELER MFG. CO., C. H., 19th & Lehigh, Philadelphia 32, Pa. ADV. PG. 112
Worcester Valve Co., Inc., 16 Parker St., Worcester, Mass.

VALVES—Packed-Seal

Alloy Steel Products Co., 1329 W. Elizabeth Ave., Linden, N. J.
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Annin Co., The, Div. of The Annin Corp., 6570 Telegraph Rd., Los Angeles 22, Calif.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Automatic Switch Co., Hanover Rd., Florham Park, N. J.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. ADV. PG. 58
Dahl Co., Inc., G. W., Tupelo St., Bristol, R. I.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Edward Valves, Inc., 1200 W. 145th St., East Chicago, Ind.
Greer Hydraulics, Inc., International Airport, Jamaica 30, N. Y.
Hammel-Dahl Co., Warwick Industrial Park, Providence 5, R. I.
HOKE, INC., 233 S. Dean St., Englewood, N. J. ADV. PG. 200
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
Kieley & Mueller Co., Inc., 64 Genung St., Middletown, N. Y.
Lunkenheimer Co., The, Beekman St. & Waverly Ave., Cincinnati 14, Ohio
Schutte & Koerting Co., Cornwell Heights, Bucks County, Pa.
Smith Co., S. Morgan, York, Pa.
United Aircraft Products, Inc., 1116 Balander, Dayton, Ohio
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Velan Valve Corp., 37 S. River St., Plattsburg, N. Y.

VALVES—Pressure Reducing

Aerco Corp., Paris Ave., P. O. Box 248, Northvale, N. J.
Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Annin Co., The, Div. of The Annin Corp., 6570 Telegraph Rd., Los Angeles 22, Calif.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Atlas Valve Co., 260 South St., Newark 5, N. J.
Automatic Switch Co., Hanover Rd., Florham Park, N. J.
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Cash Valve Mfg. Corp., A. W. 666 E. Wabash Ave., Decatur, Ill.
Clark Mfg. Co., 1830 E. 38th St., Cleveland 14, Ohio
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Controls Co. of America, 2450 N. 32nd St., Milwaukee 45, Wis.
Copes-Vulcan Div. of Blaw-Knox Co., 939 W. 26th St., Erie, Pa.
Cornelius Co., 550 39th Ave., N. E., Minneapolis 21, Minn.
CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. ADV. PG. 58
Davis Regulator Co., 2539 S. Wahtenaw, Chicago 2, Ill.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fisher Governor Co., Marshalltown, Iowa
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
HOKE, INC., 233 S. Dean St., Englewood, N. J. ADV. PG. 200
Jordan Corp., Div. of OPW Corp., 6013 Wiehe Rd., Cincinnati 13, Ohio
Keckley Co., O. C., 3400 Cleveland St., Skokie, Ill.
Kieley & Mueller Co., Inc., 64 Genung St., Middletown, N. Y.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Mason-Neilan, Nahatan St., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Ruggles-Klingemann Mfg. Co., Salem, Mass.
Sarco Co., Inc., 350 Fifth Ave., New York 1, N. Y.
Schutte & Koerting Co., Cornwell Heights, Bucks County, Pa.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Smith Co., S. Morgan, York, Pa.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
United Aircraft Products, Inc., 1116 Balander, Dayton, Ohio
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vickers Inc., Div. of Sperry-Rand Corp., Marine & Ordnance Dept., Waterbury 20, Conn.

VALVES—Reducing

Aerco Corp., Paris Ave., P. O. Box 248, Northvale, N. J.
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Atlas Valve Co., 260 South St., Newark 5, N. J.
Automatic Switch Co., Hanover Rd., Florham Park, N. J.
Cash Valve Mfg. Corp., A. W. 666 E. Wabash Ave., Decatur, Ill.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Copes-Vulcan Div. of Blaw-Knox Co., 939 W. 26th St., Erie, Pa.
CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. ADV. PG. 58
Davis Regulator Co., 2539 S. Wahtenaw, Chicago 2, Ill.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Fisher Governor Co., Marshalltown, Iowa
HOKE, INC., 233 S. Dean St., Englewood, N. J. ADV. PG. 200
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
James, Pond & Clark, Inc., 2181 E. Foothill Rd., Pasadena, Calif.
Keckley Co., O. C., 3400 Cleveland St., Skokie, Ill.
Kieley & Mueller Co., Inc., Genung St., Middletown, N. Y.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Lunkenheimer Co., The, Beckman St. & Waverly Ave., Cincinnati 14, Ohio
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marine & Industrial Products Co., 1150 W. Marquette Blvd., Chicago 21, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Powell Co., Wm., The, Cincinnati 22, Ohio
Roy Co., Milton, 1300 E. Mermaid Lane, Philadelphia 18, Pa.
Schutte & Koerting Co., Cornwell Heights, Bucks County, Pa.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Smith Co., S. Morgan, York, Pa.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Tuthill Pump Co., 939 E. 95th St., Chicago 19, Ill.
United Aircraft Products, Inc., 1116 Balander, Dayton, Ohio
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vickers Inc., Div. of Sperry-Rand Corp., Marine & Ordnance Dept., Waterbury 20, Conn.

Automatic Switch Co., Hanover Rd., Florham Park, N. J.
Cash Valve Mfg. Corp., A. W. 666 E. Wabash Ave., Decatur, Ill.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Copes-Vulcan Div. of Blaw-Knox Co., 939 W. 26th St., Erie, Pa.
CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. ADV. PG. 58
Davis Regulator Co., 2539 S. Wahtenaw, Chicago 2, Ill.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Fisher Governor Co., Marshalltown, Iowa
HOKE, INC., 233 S. Dean St., Englewood, N. J. ADV. PG. 200
Jordan Corp., Div. of OPW Corp., Wiehe Rd., Cincinnati 13, Ohio
Kay & MacDonald, Inc., 11-15 Central Ave., West Orange, N. J.
Keckley Co., O. C., 3400 Cleveland St., Skokie, Ill.
Kieley & Mueller Co., Inc., 64 Genung St., Middletown, N. Y.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Mason-Neilan, Nahatan St., Norwood, Mass.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Ruggles-Klingemann Mfg. Co., Salem, Mass.
Schutte & Koerting Co., Cornwell Heights, Bucks County, Pa.
Smith Co., S. Morgan, York, Pa.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Sunvic Controls Ltd., 10 Essex St., Strand, London, W. C. 2, England
United Aircraft Products, Inc., 1116 Balander, Dayton, Ohio
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vickers Inc., Div. of Sperry-Rand Corp., Marine & Ordnance Dept., Waterbury 20, Conn.
Watts Regulator Co., 10 Embankment St., Lawrence, Mass.

VALVES—Relief

Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Automatic Switch Co., Hanover Rd., Florham Park, N. J.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Cash Valve Mfg. Corp., A. W., 666 E. Wabash Ave., Decatur, Ill.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Cornelius Co., 550 39th Ave., Minneapolis 21, Minn.
CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. ADV. PG. 58
Davis Regulator Co., 2539 W. Wahtenaw, Chicago 2, Ill.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
Edward Valves, Inc., 1200 W. 145th St., East Chicago, Ind.
Farris Engineering Co., 400 Commercial Ave., Palisades Park, N. J.
Fisher Governor Co., Marshalltown, Iowa
Greer Hydraulics, Inc., International Airport, Jamaica 30, N. Y.
HOKE, INC., 233 S. Dean St., Englewood, N. J. ADV. PG. 200
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
James, Pond & Clark, Inc., 2181 E. Foothill Rd., Pasadena, Calif.
Keckley Co., O. C., 3400 Cleveland St., Skokie, Ill.
Kieley & Mueller Co., Inc., Genung St., Middletown, N. Y.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Lunkenheimer Co., The, Beckman St. & Waverly Ave., Cincinnati 14, Ohio
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Marine & Industrial Products Co., 1150 W. Marquette Blvd., Chicago 21, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Powell Co., Wm., The, Cincinnati 22, Ohio
Roy Co., Milton, 1300 E. Mermaid Lane, Philadelphia 18, Pa.
Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Smith Co., S. Morgan, York, Pa.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Tuthill Pump Co., 939 E. 95th St., Chicago 19, Ill.
United Aircraft Products, Inc., 1116 Balander, Dayton, Ohio
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
Vickers Inc., Div. of Sperry-Rand Corp., Marine & Ordnance Dept., Waterbury 20, Conn.

Watts Regulator Co., 10 Embankment St., Lawrence, Mass.
York Corp., York, Pa.

VALVES—Solenoid

Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
Alco Valve Co., 965 Kingsland Ave., St. Louis 5, Mo.
Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Atkomatic Valve Co., Inc., 545 W. Abbott St., Indianapolis, Ind.
Automatic Switch Co., Hanover Rd., Florham Park, N. J.
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Caltron Products Co., 1310–12 S. Hobert Blvd., Los Angeles 6, Calif.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Consolidated Electrodynamics Corp., Rochester Div., 1775 Mt. Read Blvd., Rochester, N. Y.
Controls Co. of America, 2450 N. 32nd St., Milwaukee 45, Wis.
Copes-Vulcan Div. of Blaw-Knox Co., 939 W. 26th St., Erie, Pa.
Davis Regulator Co., 2539 W. Wahtenaw, Chicago 2, Ill.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
Hanna Engineering Works, 1767 N. Elston Ave., Chicago 22, Ill.
Hays Mfg. Co., 814 W. 12th St., Erie, Pa.
HOKE, INC., 233 S. Dean St., Englewood, N. J. ADV. PG. 200
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
Jackes-Evans Mfg. Co., 4427 Geraldine, St. Louis 15, Mo.
Johnson Corp., 809 Wood St., Three Rivers, Mich.
Johnson Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Kahlenberg Bros. Co., 12th & Monroe Sts., Two Rivers, Wis.
Keckley Co., O. C., 3400 Cleveland St., Skokie, Ill.
Kinley & Mueller Co., Inc., 64 Genung St., Middletown, N. Y.
Koontz-Wagner Electric Co., N. Michigan & Marion, South Bend, Ind.
Laurence Co., Inc., R. G., 134 Summit St., Tenafly, N. J.
Leslie Co., 299 Grant Ave., Lyndhurst, N. J.
Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Ruggles-Klingemann Mfg. Co., Salem, Mass.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
United Aircraft Products, Inc., 1116 Balander, Dayton, Ohio
Valcor Engineering Corp., 365 Carnegie Ave., Kenilworth, N. J.
Vesco Vacuum Corp., 86 Denton Ave., New Hyde Park, N. Y.
Vickers Inc., Div. of Sperry-Rand Corp., Marine & Ordnance Dept., Waterbury 20, Conn.
Waterman Engineering Co., 725 Custer Ave., Evanston, Ill.
Westinghouse Electric Corp., Atomic Equipment Div., Cheswick, Pa.
York Corp., York, Pa.

VALVES—Vacuum

Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
Associated Engineering & Mfg. Corp., Glen Ridge, N. J.
Automatic Switch Co., Hanover Rd., Florham Park, N. J.
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Carpenter Valves Corp., 6723 Denison Ave., Cleveland 2, Ohio
Cash Valve Mfg. Corp., A. W., 666 E. Wabash Ave., Decatur, Ill.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Consolidated Electrodynamics Corp., Rochester Div., 1775 Mt. Read Blvd., Rochester, N. Y.
Copes-Vulcan Div. of Blaw-Knox Co., 939 W. 26th St., Erie, Pa.
CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. ADV. PG. 58
Dahl Co., Inc., G. V., Tupelo St., Bristol, R. I.
Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Hammel-Dahl Co., Warwick Industrial Park, Providence 5, R. I.
Harlas, Granta Terrace, Stapleford, Cambridge, England
High Vacuum Equipment Corp., 2 Churchill Rd., Hingham, Mass.
HOKE, INC., 233 S. Dean St., Englewood, N. J. ADV. PG. 200
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.
International Pump & Machine Works, 81 Dorse Ave., Livingsten, N. J.
James, Pond & Clark, Inc., 2181 E. Foothill Blvd., Pasadena, Calif.
Jamesbury Corp., 45 New St., Worcester 5, Mass.
Kinetics Corp., 2 Churchill Rd., Hingham, Mass.
KINNEY MFG. DIV., THE NEW YORK AIR BRAKE CO., Jamaica Plain, 3529 Washington St., Boston 30, Mass. ADV. PG. 201
Kontes Glass Co., Dept. P-159, Vineland, N. J.
Mallory-Schwarzkopf Metals Inc., 320 Yonkers Ave., Yonkers, N. Y.
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
NRC EQUIPMENT CORP., A SUB. OF NATIONAL RESEARCH CORP., 87 Charlemont St., Newton Highlands 61, Mass. ADV. PG. 32
NUCLEAR MATERIALS & EQUIPMENT CORP., 680 Warren Ave., Apollo, Pa. ADV. PG. 151
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Research Vacuum Supply Co., 6712 N. Clark St., Chicago, Ill.
Resitron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
Robbins Aviation, 1735 W. Florence Ave., Los Angeles 47, Calif.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
STOKES CORP., F. J., 5500 Tabor Rd., Philadelphia 20, Pa. ADV. PG. 132
United Aircraft Products, Inc., 1116 Balander, Dayton, Ohio
Vacuum Equipment Div. of The New York Air Brake Co., Admiral Wilson Blvd., Camden, N. J.
Vacuum Industrial Applications, Ltd., Netherton Rd., Wishaw, Lanarkshire, Scotland
Vacuum Specialties Co., Inc., 34 Linden St., Somerville, Mass.
Vacuum Tube Products Co., Inc., 506 S. Cleveland St., Oceanside, Calif.
Vesco Vacuum Corp., 86 Denton Ave., New Hyde Park, N. Y.
Velan Valve Corp., 37 S. River St., Plattsburg, N. Y.
Watts Regulator Co., 10 Embankment St., Lawrence, Mass.
Worcester Valve Co., Inc., 16 Parker St., Worcester, Mass.

VENTILATORS

See also FANS and AIR CONDITIONING UNITS

American Agile Corp., P. O. Box 168, Bedford, Ohio
American Air Filter Co., 215 Central Ave., Louisville 8, Ky.
Century Fan & Ventilator Co., 25 Cedar St., Stamford, Conn.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
DeBothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.
Hirschman-Pohle Co., Inc., 115 Lent Ave., LeRoy, N. Y.
Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, Ill.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Schutte & Koerting Co., Cornwell Heights, Bucks County, Pa.
Warner Ventilator Co., La Grange, Ind.

VESSELS—Containment
VESSELS—Pressure

See POWER PLANT EQUIPMENT

VIEWING EQUIPMENT—Optical, Remote

Anatran Div., Endevco Corp., 161 E. California, Pasadena, Calif.
Artison Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y.
Barr & Stroud Ltd., Caxton St., Anniesland, Glasgow, W. 3, Scotland
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa.
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Eder Instrument Co., Inc., 2293 N. Clybourn Ave., Chicago 14, Ill.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
KOLLMORGEN OPTICAL CORP., 347 King St., Northampton, Mass. ADV. PG. 150
National Electrical Instrument Co., 92–21 Corona Ave., Elmhurst, N. Y.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.

VIEWING EQUIPMENT—Shielding Windows

See also ZINC BROMIDE

Alley Flange & Fitting Corp., 222 Eagle St., Brooklyn, N. Y.
AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
CONTROLLED ATMOSPHERE ENCLOSURES CORP., 230–11 141st Ave., Springfield Gardens 13, N. Y. ADV. PG. 194
CORNING GLASS WORKS, Corning, N. Y. ADV. PG. 138
Harry Co., Inc., E. V., 1433 Sloman Ave., Detroit 11, Mich.
KELLEY & CO., O. G., 98 Taylor St., Dorchester, Mass. ADV. PG. 53
LENNARD CO., INC., P. M., 1 Henson Place, Brooklyn 17, N. Y. ADV. PG. 182, 208
Marfre Mfg. Co., 156 W. Washington St., West Chicago, Ill.
PENBERTHY INSTRUMENT CO., HI-D DIVISION, 4301 6th Ave., So., Seattle 8, Wash. ADV. PG. 108
Pittsburgh Plate Glass Co., 1 Gateway Center, Pittsburgh 22, Pa.
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216

VIEWING EQUIPMENT—Television

Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Diamond Power Specialty Corp., Lancaster, Ohio
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
General Electric Co., Technical Products Dept., Electronics Park, Syracuse, N. Y.
General Precision Laboratory, Inc., 63 Bedford Rd., Pleasantville, N. Y.
Hallamore Electric Co., 360 Merchandise Mart, Chicago 54, Ill.
Kin Tel (Kay Lab), 5725 Kearny Villa Rd., San Diego 11, Calif.
MARVEL-SCHEBLER PRODUCTS DIV. OF BORG-WARNER CORP., Decatur, Ill. ADV. PG. 60D
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Resitron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
Telechrome Mfg. Corp., 30 Ranick Drive, Amityville, N. Y.

VOLTMETERS

Assembly Products, Inc., Chesterland 6, Ohio
Baldwin Instrument Co., Ltd., Brooklands, Works, Dartford, Kent, England
Beta Electric Corp., 333 E. 103rd St., New York 29, N. Y.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Cambridge Instrument Co., Ltd., 13 Gosvenor Place, London, S. W. 1, England
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Davon Co., The, Route 10, Livingston, N. J.
DeJur-Amsco Corp., 45–01 Northern Blvd., Long Island City 1, N. Y.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Epic, 154 Nassau St., New York 38, N. Y.
GENERAL ELECTRIC CO., APPARATUS SALES DIV., 1 River Rd., Schenectady 5, N. Y. ADV. PG. 74, 75, 165
Gulton Industries, Durham Ave., Metuchen, N. J.
Heath Co., Benton Harbor, Mich.
Hellpot Corp., Newport Beach, Calif.
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 18, Ohio
Instrument Center, 55-G, Reade St., New York 7, N. Y.
International Instruments, Inc., P. O. Box 2954, New Haven 15, Conn.
Jennings Radio Mfg. Corp., 970 McLaughlin Ave., P. O. Box 1278, San Jose 12, Calif.
Magna-Pulse Corp., 11 Godwin Ave., Fair Lawn, N. J.
Marion Electrical Instrument Co., Greiner Field, Manchester, N. H.
Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio
Measurements Corp., Boonton, N. J.
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.

Paco Electrical Instruments Co., Inc., 70–31 84th St., Glendale 27, N. Y.
Phaostron Instrument & Electronic Co., 151 Pasadena Ave., South Pasadena, Calif.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
PHYSICS RESEARCH LABORATORIES, P. O. Box 555, Hempstead, N. Y. ADV. PG. 199
Precision Apparatus Co., Inc., 70–31 84th St., Glendale 27, N. Y.
Q. V. S., Inc., 20 N. 15th St., East Orange, N. J.
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Servo-Tek Products Co., 1086 Goffle Rd., Hawthorne, N. J.
Shurite Meters, 35 Hamilton St., New Haven 8, Conn.
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Sterling Mfg. Co., 7201 Wentworth Ave., Cleveland 2, Ohio
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Waters Manufacturing, Inc., Boston Post Rd., Wayland, Mass.
Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.

VOLTMETERS—Electronic

Airmec Ltd., High Wycombe, Buckinghamshire, England
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Beta Electric Corp., 333 E. 103rd St., New York 29, N. Y.
Brüel & Kjaer, Naerum, Denmark
Cambridge Instrument Co., Ltd., 13 Grosvenor Place, London, S. W. 1, England
Clough Brengle Co., 6014 N. Broadway, Chicago, Ill.
Computer-Measurements Corp., 5528 Vineland Ave., North Hollywood, Calif.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
CURTISS-WRIGHT CORP., ELECTRONICS DIV., 631 Central Ave., Carlstadt, N. J. ADV. PG. 137
Daven Co., The, Route 10, Livingston, N. J.
Dawe Instruments Ltd., 99 Oxbridge Road, Ealing, London W. 5, England
DUMONT LABS., INC., ALLEN B., 760 Bloomfield Ave., Clifton, N. J. ADV. PG. 109
Electronic Associates, Inc., Long Branch, N. J.
Feller Engineering & Mfg. Co., 8026 N. Monticello Ave., Skokie, Ill.
Fluke Mfg. Co., Inc., John, 1111 W. Nickerson St., Seattle 99, Wash.
FRANKLIN ELECTRONICS, INC., E. Fourth St., Bridgeport, Pa. ADV. PG. 162
Furzehill Laboratories Ltd., 57, Clarendon, Rd., Watford, Herts, England
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Heath Co., Benton Harbor, Mich.
Hewlett-Packard Co., 275 Page Mill Rd., Palo Alto, Calif.
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland 18, Ohio
Hycon Electronics, Inc., P. O. Bin D, Pasadena, Calif.
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio
Jennings Radio Mfg. Corp., 970 McLaughlin Ave., P. O. Box 1278, San Jose 12, Calif.
Kay Electric Co., 14 Maple Ave., Pine Brook, N. J.
KEITHLEY INSTRUMENTS, INC., DEPT. NB, 12415 Euclid Ave., Cleveland 6, Ohio. ADV. PG. 126
Kin Tel (Kay Lab), 5725 Kearny Villa Rd., San Diego 11, Calif.
Magne-Pulse Corp., 11 Godwin Ave., Fair Lawn, N. J.
Measurements Corp., Boonton, N. J.
Moseley Co., F. L., 409 N. Fair Oaks Ave., Pasadena, Calif.
Nash & Thompson Ltd., Oakcroft Rd., Chessington, Surrey, England
Neutronics Research Co., 165 Lake St., Waltham, Mass.
Paco Electrical Instruments Co., Inc., 70–31 84th St., Glendale 27, N. Y.
Phaostron Instrument & Electronic Co., 151 Pasadena Ave., South Pasadena, Calif.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Precision Apparatus Co., Inc., 70–31 84th St., Glendale 27, N. Y.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Telechrome Mfg. Corp., 30 Banick Drive, Amityville, N. Y.
Telectro Industries Corp., 35–16 37th St., Long Island 1, N. Y.
Teletronics Laboratory, Inc., 54 Kinkel St., Westbury, N. Y.
Trio Laboratories, Inc., 4025 Merrick Rd., Seaford, N. Y.
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio
Waters Manufacturing, Inc., Boston Post Rd., Wayland, Mass.
Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.

WASTE DISPOSAL SYSTEMS—Radioactive

Adler Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
Atomation, Inc., 5959 S. Hoover St., Los Angeles 44, Calif.
ATOMIC ENERGY WASTE DISPOSAL SERVICE, 5410 Bond St., Oakland 1, Calif. ADV. PG. 204
BLAW-KNOX CO., CHEMICAL PLANTS DIV., 300 Sixth Ave., Pittsburgh 22, Pa. ADV. PG. 43
Chem-Pure Service Co., 762 Industrial Rd., San Carlos, Calif.
Edlow Lead Co., 729 Bank St., Columbus 16, Ohio
Griscom-Russell Co., Massillon, Ohio
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Inflico, Inc., P. O. Box 5033, Tucson, Ariz.
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.
JOHNSON & ASSOCIATES, INC., WILLIAM B., P. O. Box 415, Mountain Lakes, N. J. ADV. PG. 203
KAISER ENGINEERS, ATOMIC ENERGY DIV. OF HENRY J. KAISER CO., Oakland 12, Calif. ADV. PG. 11
KIDDE NUCLEAR LABORATORIES, INC., WALTER, 975 Stewart Ave., Garden City, N. Y. ADV. PG. 152
Nordan Ketay Corp., Commerce Rd., Stamford, Conn.
PACIFIC COAST ENGINEERING CO., Oak & Clement Sts., Alameda, Calif. ADV. PG. 116
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
Permutit Co., 50 W. 44th St., New York 36, N. Y.
PUROLATOR PRODUCTS, INC., 470 New Brunswick Ave., Rahway, N. J. ADV. PG. 185

WATER CONDITIONERS

Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Chem-Pure Service Co., 762 Industrial Rd., San Carlos, Calif.
Crystal Research Labs., Inc., 29 Allyn St., Hartford 3, Conn.
Dearborn Chemical Corp., 375 Merchandise Mart, Chicago 54, Ill.
ELGIN SOFTENER CORP., 179 S. Grove Ave., Elgin, Ill. ADV. PG. 110
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
General Biochemicals, Inc., Laboratory Park, Chagrin Falls, Ohio
Graver Water Conditioner Co., 216 W. 14th St., New York 11, N. Y.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.
Inflico, Inc., P. O. Box 5033, Tucson, Ariz.
Monsanto Chemical Co., Plastics Div., 600 Monsanto Ave., Springfield 2, Mass.
National Aluminate Corp., 6216 W. 66th Place, Chicago 38, Ill.
Oakite Products, Inc., 19 Rector St., New York 6, N. Y.
PENFIELD MFG. CO., INC., 19 High School Ave., Meriden, Conn. ADV. PG. 139
Permutit Co., 50 W. 44th St., New York 36, N. Y.
Philadelphia Quartz Co., 1146X Public Ledger Bldg., Philadelphia 6, Pa.
Scientific Equipment Co., 23 N. Hawthorne Lane, Indianapolis 19, Ind.
Trionics Corp., P. O. Box 548, Madison 1, Wis.
Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.

WATER—Heavy

See also ISOTOPES—Stable

ATOMIC ENERGY OF CANADA, LTD., COMMERCIAL PRODUCTS DIV., P. O. Box 93, Ottawa, Ontario, Canada. ADV. PG. 129
ATOMIC RESEARCH LABORATORY, 10717 Venice Blvd., Los Angeles 34, Calif. ADV. PG. 206
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
WEIZMAN INSTITUTE OF SCIENCE, Rehovot, Israel. ADV. PG. 203

WAVEGUIDES

Artisan Metal Products Co., Inc., 73 Pond St., Waltham 53, Mass.
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Central Electronic Manufacturers, Inc., 2 Richwood Place, Denville, N. J.
Daimo Victor Co., 1315 Industrial Way, Belmont, Calif.
Diamond Antenna & Microwave Corp., 7 North Ave., Wakefield, Mass.
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Narda Microwave Corp., The, 160 Herricks Rd., Mineola, N. Y.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
Smith Tube Corp., 45 N. Broad St., Ridgewood, N. J.
Sperry Gyroscope Div. of Sperry-Rand Corp., Great Neck, N. Y.
Technicraft Labs., Inc., Thomaston-Waterbury Rd., Thomaston, Conn.
Wolworth Co., 60 E. 42nd St., New York 17, N. Y.

WELDING EQUIPMENT

Acoustica Associates, Inc., 26 Windsor Rd., Mineola, N. Y.
Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., 150 W. 42nd St., New York 17, N. Y.
Alloys Unlimited, Inc., 44–15 Vernon Blvd., Long Island City 1, N. Y.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Eisler Engineering Co., 760 S. 13th St., Newark 3, N. J.
General Scientific Equipment Co., 7516 Limekiln Pike, Philadelphia 50, Pa.
Hoosier Tarpaulin & Canvas Goods Co., 1302 W. Washington Ave., Indianapolis 6, Ind.
L&B Welding Equipment, Inc., 2424 6th St., Berkeley, Calif.
Metal & Thermit Corp., Rahway, N. J.
Pandjiris Weldment Co., 5151 Northrup Ave., St. Louis 10, Mo.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
Scientific Electric Corp., 105–119 Monroe St., Garfield, N. J.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
Stewart Engineering Co., P. O. Box 277, Soquel, Calif.
Vacuum Specialties Co., Inc., 34 Linden St., Somerville, Mass.
Vacuum Tube Products Co., Inc., 506 S. Cleveland St., Oceanside, Calif.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Worthington Corp., Harrison, N. J.

WINDOWS—Counter

BAIRD-ATOMIC, INC., 33 University Rd., Cambridge 38, Mass. ADV. PG. Third Cover
Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa.
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
RADIATION COUNTER LABS., INC., 5122 W. Grove St., Skokie, Ill. ADV. PG. 29
SINGLE CRYSTAL CORP. OF AMERICA, RD1, Saxonburg Blvd., Saxonburg, Pa. ADV. PG. 175
Techniques, Inc., P. O. Box 85, Hackensack, N. J.
TRACERLAB, INC., 1601 Trapelo Rd., Waltham 54, Mass. ADV. PG. 50
Universal Industrial Equipment Co., 1625 Paterson Plank Rd., Secaucus, N. J.

WINDOWS—Shielding

See VIEWING EQUIPMENT—Shielding Windows

X-RAY DIFFRACTION APPARATUS

ANTON ELECTRONIC LABS., INC., 1226–38 Flushing Ave., Brooklyn 37, N. Y. ADV. PG. 139
Bracke-Seib X-Ray Co., Inc., 16 Pelham Bay Park W., Pelham Manor, N. Y.

Chromium Corp. of America, Box 1229, Waterbury 20, Conn.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Labgear (Cambridge) Ltd., Nucleonics Division Cromwell Rd., Cambridge, England
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
Philips Electronics Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
ST. JOHN X-RAY LABORATORY, Clifton, N. J. ADV. PG. 208
Salus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

X-RAY EQUIPMENT—Industrial

See also RADIOGRAPHIC EQUIPMENT—X-Ray

Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
APPLIED RADIATION CORP., 2404 N. Main St., Walnut Creek, Calif. ADV. PG. 60
Applied Research Labs., P. O. Box 1715, Glendale 5, Calif.
BAR-RAY PRODUCTS, INC., 209 25th St., Brooklyn 32, N. Y. ADV. PG. 73
Brocke-Seib X-Ray Co., Inc., 16 Pelham Bay Park W., Pelham Manor, N. Y.
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
General Radiological, Ltd., 15–18 Clipstone St., London, W. 1, England
HIGH VOLTAGE ENGINEERING CORP., S. Bedford St., Burlington, Mass. ADV. PG. 170, 171
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Labgear (Cambridge) Ltd., Nucleonics Div., Cromwell Rd., Cambridge, England
Philips Electronics Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
PHILIPS' GLOEILAMPENFABRIEKEN, N. V., Eindhoven, Holland. ADV. PG. 56
PICKER X-RAY CORP., 25 S. Broadway, White Plains, N. Y. ADV. PG. 142
Rositron Laboratories, Inc., 2908 Nebraska Ave., Santa Monica, Calif.
ST. JOHN X-RAY LABORATORY, Califon, N. J. ADV. PG. 208
Salus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
Thomas Instrument Co., Phoenix, N. Y.
Universal X-Ray Corp., 1140 N. Western Ave., Chicago 22, Ill.
WESTINGHOUSE ELECTRIC CORP., P. O. Box 868, Pittsburgh 30, Pa. ADV. PG. 63–66, 168, 169
Westinghouse Electric Corp., X-Ray Div., 2519 Wilkens Ave., Baltimore 3, Md.
X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

X-RAY TUBES

See TUBES—X-Ray

ZINC BROMIDE

See also VIEWING EQUIPMENT—Shielding Windows

AMERAY CORP., 25 Route #46, Kenvil, N. J. ADV. PG. 42
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Dow Chemical Co., Midland, Mich.
Pine Chemical Co., Inc., 250 W. 57th St., New York 19, N. Y.
MICHIGAN CHEMICAL CORP., RARE EARTH & THORUN DIV., St. Louis, Mich. ADV. PG. 136
RAY-PROOF CORP., 843 Canal St., Stamford, Conn. ADV. PG. 216
SINGLE CRYSTAL CORP. OF AMERICA, RD1, Saxonburg Blvd., Saxonburg, Pa. ADV. PG. 175

ZINC SULPHIDE

See CHEMICALS

1957-1958 NUCLEONICS BUYERS' GUIDE

MANUFACTURERS INDEX

A listing of the companies engaged in the manufacture of all types of equipment, components and materials for use in the nuclear energy field. They are alphabetically arranged for convenient use and quick reference.

A

ACF Industries, Inc., Nuclear Products-Erco Div., 508 Kennedy St., N. W., Washington 11, D. C.
AMF Atomics, A Div. of American Machine & Foundry Co., 261 Madison Ave., New York 16, N. Y.
Abbe Engineering Co., 50 Church St., New York 7, N. Y.
Abbeon Supply Co., 179-15 Jamaica Ave., Jamaica 32, N. Y.
Abbott Laboratories, North Chicago, Ill.
Abrams Instrument Corp., 600-620 E. Shiawassee St., Lansing, Mich.
Accurate Sheet Metal & Mfg. Works, 2336-38 Milwaukee Ave., Chicago 47, Ill.
Ace Electronics Associates, Inc., 99 Dover St., Somerville 44, Mass.
Ace Engineering & Machine Co., Inc., 3642 N. Lawrence St., Philadelphia 40, Pa.
Acheson Colloids Co., Div. of Acheson Industries, Inc., 1631 Washington Ave., Port Huron, Mich.
Acme Brick Co., P. O. Box 425, Fort Worth 1, Texas
Acme Electric Corp., 31 Water St., Cuba, N. Y.
Acme Electric Heating Co., Inc., 1205 Washington St., Boston, Mass.
Acme Protection Equipment Co., 1299 Kalamazoo St., South Haven, Mich.
Acme Telectronix Div., NEA Service, Inc., W. Third & Lakeside, Cleveland 13, Ohio
Acoustica Associates, Inc., 26 Windsor Rd., Mineola, N. Y.
Adams Co., Inc., R. P., 473 E. Park Drive, Buffalo 17, N. Y.
Adams & Westlake Co., Michigan St., Elkhart, Ind.
Adkins & Merrill, Sudbury, Mass.
Adler Electronics, Inc., 1 Le Fevre Lane, New Rochelle, N. Y.
Adler's Metal Works, 1310 Germantown Ave., Philadelphia 22, Pa.
Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
Advance Electronics Lab., Inc., 249-259 Terhune Ave., Passaic, N. J.
Advance Instrument Corp., 1109 Sixth Ave., Neptune, N. J.
Advanced Instruments, Inc., 21-N Oakcrest Rd., Needham, Boston 92, Mass.
Advanced Products Co., 59 Broadway, North Haven, Conn.
Aerco Corp., Paris Ave., P. O. Box 248, Northvale, N. J.
Aero Research Instrument Co., 315 N. Aberdeen St., Chicago 7, Ill.
Aerojet-General Corp., Architect-Engineer Div., 410 N. Citrus Ave., Covina, Calif.
Aerojet-General Nucleonics, San Ramon, Calif.
Aeroquip Corp., 300 S. East St., Jackson, Mich.
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
Aerovox Corp., Pacific Coast Div., 2724 S. Peck Rd., Monrovia, Calif.
Aetna Scientific Co., Second & Spring St., Everett 49, Mass.
Air Controls, Inc., 2312 Superior Ave., Cleveland 14, Ohio
Air Engineering Co., 49 Hillside St., Watertown 72, Mass.
Air Marine Motors, Inc., 369 Bay View Ave., Amityville, N. Y.
Air-Maze Corp., 25000 Miles Rd., Cleveland, Ohio
Air Reduction Sales Co., A Div. of Air Reduction Co., Inc., 150 W. 42nd St., New York 17, N. Y.
Air & Refrigeration Corp., 439 Madison Ave., New York 17, N. Y.
Airborne Accessories Corp., 1414 Chestnut Ave., Hillside 5, N. J.
Airborne Instruments Labs., Inc., 160 Old Country Rd., Mineola, N. Y.
Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.
Aireco, Inc., 2323 Second Ave., Schenectady, N. Y.
Airmatic Systems Corp., 441 Market St., Saddle Brook, Rochelle Park, N. J.
Airmatic Valve, Inc., 7313 Associate Ave., Cleveland 9, Ohio
Airmec Ltd., High Wycombe, Buckinghamshire, England
Airpax Products Co., Middle River, Baltimore 20, Md.
Akron Metallic Gasket Co., The, 150 N. Union St., Akron, Ohio
Alcar Instruments Inc., 17 Industrial Ave., Little Ferry, N. J.
Alco Mfg. Co., 4011 Cuming St., Omaha 3, Neb.
Alco Products, Inc., 30 Church St., New York 8, N. Y.
Alco Valve Co., 865 Kingsland Ave., St. Louis 5, Mo.
Alden Electronic & Impluse Recording Equipment Co., Westboro, Mass.
Alden Products Co., 147 N. Main St., Brockton 64, Mass.
Alden Systems Co., Alden Research Center, Westboro, Mass.
Alfax Paper & Engineering Co., P. O. Box 125, Westboro, Mass.
Al-Fin Div., Fairchild Engine & Airplane Corp., Conklin St., Farmingdale, N. Y.
Alite Div. of U. S. Stoneware Co., P. O. Box 119, Orrville, Ohio
All-Stainless Inc., 36 Rugg Road, Allston 34, Mass.
Allegany Instrument Co., Inc., Cumberland, Md.
Allegheny Ludlum Steel Corp., Oliver Bldg., Room 2020, Pittsburgh 22, Pa.
Allen-Bradley Co., 136 W. Greenfield Ave., Milwaukee 4, Wis.
Alliance Manufacturing Co., Lake Park Blvd., Alliance, Ohio
Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.
Allied Engineering & Production Corp., 242 Blanding Ave., Alameda, Calif.
Allied Plastics Supply Corp., 75 Cliff St., New York 38, N. Y.
Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill.
Allied Research Associates, Inc., 43 Leon St., Boston 15, Mass.
Allied Resinous Products Inc., Box 620, Conneaut, Ohio
Allies Products Corp., P. O. Box 188, Kendall Station, Miami, Fla.
Allis-Chalmers Mfg. Co., 935 S. 70th St., Milwaukee 1, Wis.
Alloy Flange & Fitting Corp., 222 Eagle St., Brooklyn, N. Y.
Alloy Steel Products Co., 1329 W. Elizabeth Ave., Linden, N. J.
Alloys Unlimited, Inc., 44-15 Vernon Blvd., Long Island City 1, N. Y.
Aloe Scientific Div., A. S. Aloe Co., 5655 Kingsbury Blvd., St. Louis 12, Mo.
Alpha Metals Inc., 56 Water St., Jersey City 4, N. J.
Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.
Ambery Corp., 21320 Stephenson, Hazel Park, Mich.
Amco Engineering Co., 7333 Ainslie St., Chicago 31, Ill.
Ameray Corp., 25 Route #46, Kenvil, N. J.
Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.
American Agile Corp., P. O. Box 168, Bedford, Ohio
American Air Filter Co., 215 Central Ave., Louisville 8, Ky.
American Blower Div., American Radiator & Standard Corp., 6111 Tireman Ave., Dearborn, Mich.
American Brass Co., Waterbury 20, Conn.
American Duraflim Co., Inc., 2300 Washington St., Newton Lower Falls, Mass.
American Electronic Laboratories, Inc., 121 N. 7th St., Philadelphia 6, Pa.
American Electronics, Inc., 655 W. Washington Blvd., Los Angeles 15, Calif.
American Gas Furnace Co., 130 Spring St., Elizabeth, N. J.
American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.
American Laundry Machinery Co., Norwood 12, Ohio
American Lava Corp., Steatite Div. Manufacturers Rd., Chattanooga 5, Tenn.
American Machine Products Co., Marshalltown, Iowa
American Metal Co., Ltd., The, 61 Broadway, New York 6, N. Y.
American Optical Co., 28 Mechanic St., Southbridge, Mass.
American Optical Co., Instrument Div., Box A, Buffalo 15, N. Y.
American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark, N. J.
American Potash & Chemical Corp., 3030 W. 6th St., Los Angeles 54, Calif.
American Products Mfg. Co., Inc., 8127-33 Oleander St., New Orleans 18, La.
American Research Corp., Route 6, Farmington, Conn.
American Silver Co., 36-07 Prince St., Flushing, N. Y.
American-Standard Atomic Energy Div., 1682 Broadway, Redwood City, Calif.
American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.
American Thermo Electric Co., 7269 Santa Monica Blvd., Los Angeles 46, Calif.
American Time Products, Inc., 580 Fifth Ave., New York 36, N. Y.
American Tradair Corp., Sub. of Elco Electronics, Ltd., 34-01 30th St., Long Island City 6, N. Y.
American Turbine Corp., 52 William St., New York 5, N. Y.
Amersil Co., Inc., 683 Ramsey Ave., Hillside, N. J.
Ames Metal Products, 4323 S. Western Ave., Chicago, Ill.
Amglo Corp., 4333 Ravenswood Ave., Chicago 13, Ill.
Amp, Incorporated, Harrisburg, Pa.
Amp, Incorporated, Chemicals & Dielectrics Div., 155 Park St., Elizabethtown, Pa.
Amperex Electronic Corp., 230 Duffy Ave., Hicksville, N. Y.
Amperite Co., Inc., 561 Broadway, New York 12, N. Y.
Ampex Corp., 934 Charter St., Redwood City, Calif.
Amphenol Electronics Corp., 1830 S. 54th Ave., Chicago 50, Ill.
Ampliffer Corp. of America, 396 Broadway, New York 13, N. Y.
Anaconda Co., 25 Broadway, New York 4, N. Y.
Analytical Measurements, Inc., 585 Main St., Chatham, N. J.
Anatron Div., Endevco Corp., 161 E. California, Pasadena, Calif.
Anchor Metal Co., 966 Meeker Ave., Brooklyn 22, N. Y.
Anchor Plastics Co., Inc., 36-36 36th St., Long Island City 6, N. Y.
Andel & Co., Inc., 5218 N. Kedzie Ave., Chicago 25, Ill.
Anderson Laboratories, Inc., 39 Talcott Road, West Hartford 10, Conn.
Anderson Co., V. D., Purifier Div., 1935 W. 96th St., Cleveland 2, Ohio
Anderson Valve Works, 9th & Adams Ave., Marion, Ind.
Anelite Co., 3575 Touhy Ave., Chicago 45, Ill.
Anetsberger Bros., Northbrook, Ill.
Annin Co., The, Div. of The Annin Corp., 6570 Telegraph Rd., Los Angeles 22, Calif.
Ansco Division, General Aniline & Film Corp., Binghamton, N. Y.
Antara Chemicals, Div. of General Aniline & Film Corp., 435 Hudson St., New York 14, N. Y.
Anton Electronic Labs., Inc., 1226-38 Flushing Ave., Brooklyn 37, N. Y.
Applied Physics Corp., 362 W. Colorado Blvd., Pasadena 1, Calif.
Applied Radiation Corp., 2484 N. Main St., Walnut Creek, Calif.
Applied Research Labs., P. O. Box 1710, Glendale 5, Calif.
Arco Co., 7301 Bessemer Ave., Cleveland 27, Ohio
Arda Associates, 75 Austin St., Newark 2, N. J.
Aremberg Ultrasonic Lab., Inc., 94 Green St., Jamaica Plain 30, Mass.
Armstrong Cork Co., Lancaster, Pa.
Arnhold Ceramics, Inc., 1 E. 57th St., New York 22, N. Y.
Arnold Engineering Co., Marengo, Ill.
Arnold Magnetics Corp., 5962 Smiley Drive, Culver City, Calif.
Artisan Metals Products Co., Inc., 73 Pond St., Waltham 53, Mass.
Asheville-Schoonmaker Mica Co., Inc., 900 Jefferson Ave., Newport News, Va.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
Assembly Products, Inc., Chesterland 6, Ohio
Associated Engineering Corp., 65 East St., Brookline 46, Mass.
Associated Engineering & Mfg. Corp., Glen Ridge, N. J.
Associated Research, Inc., 3758 W. Belmont, Chicago, Ill.
Associated Specialties Co., 1751 Main St., Orefield, Pa.
Associated Valve & Engineering Co., 1150 W. Marquette Rd., Chicago 21, Ill.
Astron Corp., 255 Grant Ave., East Newark, N. J.
Atkomatic Valve Co., Inc., 545 Abbott St., Indianapolis, Ind.
Atlantic Research Corp., Electromechanical Div., Alexandria, Va.
Atlas Engineering Co., 176 Blue Hill Ave., Roxbury, Mass.
Atlas Valve Co., 280 South St., Newark 5, N. J.
Atomation, Inc., 5959 S. Hoover St., Los Angeles 44, Calif.
Atomic Accessories Inc., 244-04 Jamaica Ave., Bellerose 26, N. Y.
Atomic Energy of Canada, Ltd., Commercial Products Div., P. O. Box 93, Ottawa, Ontario, Canada
Atomic Energy Waste Disposal Service, 5410 Bond St., Oakland 1, Calif.

Atomic Laboratories, 3086 Claremont Ave., Berkeley, Calif.
Atomic Research Laboratory, 10717 Venice Blvd., Los Angeles 34, Calif.
Atomics International, A Div. of North American Aviation, Inc., Box 309, Canoga Park, Calif.
Attalla Pipe & Foundry Co., Inc., P. O. Box 211, Attalla, Ala.
Auburn Mfg. Co., The, 500 Stack St., Middletown, Conn.
Audio Instrument Co., Inc., 133 W. 14th St., New York 11, N. Y.
Aurora Pump Div., The New York Air Brake Co., 48 Loucks St., Aurora, Ill.
Austenal, Inc., P. O. Box 625, Dover, N. J.
Autocall Co., Shelby, Ohio
Autoclave Eng. Sales Corp., 2930 W. 22nd St., Erie, Pa.
Automatic Electric Sales Corp., 1033 Van Buren St., Chicago 7, Ill.
Automatic & Precision Mfg. Co., 252 Hawthorne Ave., Yonkers 5, N. Y.
Automatic Switch Co., Hanover Rd., Florham Park, N. J.
Automatic Timing & Controls, Inc., King of Prussia, Pa.
Automotive & Aircraft Div., American Chain & Cable Co., Inc., 601 Stephenson Bldg., Detroit, Mich.
Avco Mfg. Corp., Research & Advanced Development Div., 20 S. Union St., Lawrence, Mass.
Avondale Marine Ways, Inc., P. O. Box 1030, New Orleans, La.
Axel Bros., Inc., Electronics Div., 134-20 Jamaica Ave., Jamaica 18, N. Y.

B

B-I-F Industries, Inc., 830-D Harris Ave., Providence 1, R. I.
BJ Electronics, Borg-Warner Corp., 3300 Newport Ave., Santa Ana, Calif.
B/W Controller Corp., 2200 E. Maple Rd., Birmingham, Mich.
Babcock Relays, Inc., 1640 Monrovia Ave., Costa Mesa, Calif.
Babcock & Wilcox Co., The, 161 E. 42nd St., New York 17, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y.
Bacon Industries, Inc., 192 Pleasant St., Watertown, Mass.
Badger Mfg. Co., 230 Bent St., Cambridge 41, Mass.
Baer Co., N. S., 9 Montgomery St., Hillside, N. J.
Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio
Baird-Atomic, Inc., 33 University Rd., Cambridge 38, Mass.
Baird & Tatlock (London) Ltd., Freshwater Rd., Chadwell Heath, Essex, England
Bakelite Co., A Div. of Union Carbide & Carbon Corp., 420 Lexington Ave., New York 17, N. Y.
Baker & Adamson Products, General Chemical Div. of Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
Baker, Chemical Co., J. T., Phillipsburg, N. J.
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.
Balco Research Labs., 49-53 Edison Place, Newark 2, N. J.
Baldwin Instrument Co., Ltd., Brooklands Works, Dartford, Kent, England
Baldwin-Lima-Hamilton Corp., Electronics & Instrumation Div., 42 Fourth Ave., Waltham 54, Mass.
Ballou & Co., Inc., B. A., 61 Peck St., Providence, R. I.
Barber-Colman Co., Electrical & Small Motors Div., Rockford, Ill.
Barco Mfg. Co., 800 N. Hough St., Barrington, Ill.
Barium & Chemicals, Inc., Willoughby, Ohio
Barker Sales Co., 996-8 Edgewater Ave., Ridgefield, N. J.
Barker & Williamson, Inc., Canal & Beaver, Bristol, Pa.
Barnes Development Co., 13 W. Baltimore Pike, Lansdowne, Pa.
Barnes Engineering Co., 30 Commerce Rd., Stamford, Conn.
Barnstead Still & Sterilizer Co., 222 Lanesville Terrace, Boston 31, Mass.
Bar-Ray Products, Inc., 209 25th St., Brooklyn 32, N. Y.
Barr & Stroud Ltd., Caxton St., Anniesland, Glasgow, W.3, Scotland
Barry Controls Inc., 731 Pleasant St., Watertown 72, Mass.
Basic, Inc., 845 Hanna Bldg., Room 845, Cleveland 14, Ohio
Bausch & Lomb Optical Co., 630 St. Paul St., Rochester 2, N. Y.
Beach-Russ Co., 80 Church St., New York 7, N. Y.
Bean & Co., Morris, Yellow Springs, Ohio
Beckman, Inc., Arnold O., 1020 Mission St., South Pasadena, Calif.
Beck's Inc., 298-300 E. Fifth St., St. Paul 1, Minn.
Belfab Corp., The, 11 Ramah Circle, Agawam, Mass.
Bell Nucleonics, Bell Aircraft Corp., P. O. Box 1, Buffalo 5, N. Y.
Bell Sound Systems, Inc., 555 Marion Rd., Columbus 7, Ohio
Belmont Smelting & Refining Works, Inc., 322 Belmont Ave., Brooklyn 7, N. Y.
Belock Instrument Corp., 111-01 14th Ave., College Point, N. Y.
Bendix Aviation Corp., Cincinnati Div., 3130 Wasson Rd., Cincinnati 8, Ohio
Benson-Lehner Corp., 11930 W. Olympic Blvd., Los Angeles 64, Calif.
Bergen Pipesupport Co., 80 Church St., New York, N. Y.
Berk & Co., Inc., F. W., Park Place East, Wood Ridge, N. J.
Berkeley Crystal Co., 1740 University Ave., Berkeley 3, Calif.
Berkeley Div. of Beckman Instruments, Inc., 2200 Wright Ave., Richmond, Calif.
Berkeley Enterprises, Inc., 513 Avenue of the Americas, New York 11, N. Y.
Berkshire Laboratories, 586 Bank Village, Greenville, N. H.
Berman Laboratories, 112-03 Rockaway Blvd., Ozone Park 20, N. Y.
Bernard-Franklin Co., Inc., 4155 E. Hadley St., Philadelphia 37, Pa.
Berndt-Bach, Inc., 6900 Romaine St., Los Angeles 38, Calif.
Beryllium Corp., P. O. Box 1462, Reading, Pa.
Beta Electric Corp., 333 E. 103rd St., New York 29, N. Y.
Bettinger Corp., Waltham, Mass.
Beva Laboratory, 22 Parker Ave., P. O. Box 478, Trenton 3, N. J.
Black Industries, Inc., 10 Indian Spring Rd., Cranford, N. J.
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.
Biggs Co., Carl H., 2235 Barry Ave., West Los Angeles 64, Calif.
Bio-Rad Laboratories, 800 Delaware St., Berkeley, Calif.
Bios Laboratories, Inc., 17 W. 60th St., New York 23, N. Y.
Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio
Bishop & Co., J., Platinum Works, Malvern, Pa.
Bisonite Co., Inc., P. O. Box 84, Kenmore Station, Buffalo 17, N. Y.
Blaw-Knox Co., Chemical Plants Div., 300 Sixth Ave., Pittsburgh 22, Pa.
Blickman, Inc., S., 7900 Gregory Ave., Weehawken, N. J.
Blonder-Tongue Laboratories, Inc., 9-25 Ailing St., Newark 2, N. J.
Bogen Co., David, P. O. Box 500, Paramus, N. J.
Bogue Electric Mfg. Co., 52 Iowa Ave., Paterson 3, N. J.
Bomac Laboratories, Inc., Salem Rd., Beverly, Mass.
Bond Electronics Corp., 60 Springfield Ave., Springfield, N. J.
Boonton Radio Corp., Boonton, N. J.
Borden Co., The, Chemical Div., 350 Madison Ave., New York 17, N. Y.
Borg Equipment Div., The George W. Borg Corp., 120 S. Main St., Janesville, Wis.
Borg-Warner Corp., 310 S. Michigan Ave., Chicago 4, Ill.
Borolite Corp., 320 Yonkers Ave., Yonkers, N. Y.
Bourns Laboratories, Inc., 6135 Magnolia Blvd., Riverside, Calif.
Bowmar Instrument Corp., 2415 Pennsylvania Ave., Fort Wayne, Ind.
Bracke-Seib X-Ray Co., Inc., 16 Pelham Bay Park W., Pelham Manor, N. Y.
Bradley Laboratories, Inc., 168 Columbus Ave., New Haven 10, Conn.
Brady Co., W. H., 727 W. Glendale Ave., Milwaukee 12, Wis.
Bram Chemical Co., Metallurgical-Chemical Div., 820 65th Ave., Philadelphia 26, Pa.
Branson Corp., Jefferson Rd., Whippany, N. J.
Branson Instruments, Inc., 37 Brown House Rd., Stamford, Conn.
Branson Ultrasonic Corp., 1 Brown House Rd., Stamford, Conn.
Brasco Corporations, Inc., 700 Liberty Ave., Union, N. J.
Brauer Electric Mfg. Co., 5100 N. Ravenswood Ave., Chicago 40, Ill.
Braw & Co., Inc., Richard D., Airport Rd., Box 339, Concord, N. H.
Bridgeport Brass Co., 30 Grand St., Bridgeport 2, Conn.
Bright Star Industries, 600 Getty Ave., Clifton, N. J.
Brinkman Instruments, Inc., 115 Cutter Mill Rd., Great Neck, N. Y.
Bristol Co., P. O. Box 1790 NBG, Waterbury 20, Conn.
Brooks & Perkins, Inc., 261 Constitution Ave., N. W., Washington 1, D. C.
Brooks Rotometer Co., Box 432, Lansdale, Pa.
Brown Boveri Corp., 19 Rector St., New York 6, N. Y.
Brown Morse Co., Muskegon, Mich.
Bruel & Kjaer, Naerum, Denmark
Brush Beryllium Co., 4301 Perkins Ave., Cleveland 3, Ohio
Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio
Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio
Budd Co., The, Nuclear Systems Div., 2450 Hunting Park Ave., Philadelphia 32, Pa.
Buffalo Pumps Div. of Buffalo Forge Co., North Tonawanda, N. Y.
Buggie & Co., H. H., Box 817, Toledo 1, Ohio
Buhl Optical Co., 1009 Beech Ave., Pittsburgh 33, Pa.
Bullard Co., E. D., 2680 Bridgeway, Sausalito, Calif.
Burgess Battery Co., Freeport, Ill.
Burke & James, Inc., 321 S. Wabash, Chicago, Ill.
Burling Instrument Co., Inc., 16 River Rd., Chatham, N. J.
Burrell Corp., 2223 Fifth Ave., Pittsburgh 19, Pa.
Burroughs Corp., Electronic Tube Div., P. O. Box 1226, Plainfield, N. J.
Burton Mfg. Co., 2520 Colorado Ave., Santa Monica, Calif.
Byron Jackson Pumps, Inc., Sub. of Borg-Warner Corp, P. O. Box 2017A, Terminal Annex, Los Angeles 54, Calif.

C

CBS-Hytron, a Division of Columbia Broadcasting System, Inc., 100 Endicott St., Danvers, Mass.
C.G.S. Laboratories, Inc., 391 Ludlow St., Stamford, Conn.
Cado Mfg. Co., A Div. of Electromation Co., 1101 Olympic Blvd., Santa Monica, Calif.
California Research Corp., 200 Bush St., San Francisco 4, Calif.
Cal-Red Inc., 1208 W. Burbank Blvd., Burbank, Calif.
Caltron Products Co., 1310-12 S. Hobart Blvd., Los Angeles 6, Calif.
Cambridge Corp., 2 Industrial Park, Lowell, Mass.
Cambridge Filter Corp., 738 E. Erie Blvd., Syracuse, N. Y.
Cambridge Instrument Co., Inc., 3529 Grand Central Terminal, New York 17, N. Y.
Cambridge Smelting Co., 100 Pacific St., Cambridge 39, Mass.
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge 38, Mass.
Camco Products Inc., 445 State St., North Haven, Conn.
Cameron Iron Works, P. O. Box 1212, Houston, Texas
Canadian Applied Research, Ltd., 1500 O'Connor Drive, Toronto 16, Ontario, Canada
Canadian Radium & Uranium Corp., 630 Fifth Ave., New York 20, N. Y.
Canoga Corp., 5955 Sepulveda Blvd., Van Nuys, Calif.
Carboline Co., 32 Hanley Industrial Court, St. Louis 17, Mo.
Carborundum Co., Globar Div., Hyde Park Blvd., Niagara Falls, N. Y.
Carborundum Co., Refractories Div., Keasbey, N. J.
Carborundum Metals Co., P. O. Box 32, Akron, N. Y.
Cardwell Condenser Corp., 97 Whiting St., Plainville, Conn.
Carlsen, Inc., G. O., Thorndale, Pa.
Carpenter Steel Co., 107 W. Bern St., Reading, Pa.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
Carpenter Valves Corp., 6723 Denison Ave., Cleveland 2, Ohio
Carrier Corp., 300 S. Geddes St., Syracuse 1, N. Y.
Carter Controls Inc., 2800 Bernice Rd., Lansing, Mich.
Carter Motor Co., 2742 W. George St., Chicago 18, Ill.
Carver Inc., Fred S., 1 Chatham Rd., Summit, N. J.
Cascade Research Corp., 83 Victory Lane, Los Gatos, Calif.
Cash Valve Mfg. Corp., A. W., 666 E. Wabash Ave., Decatur, Ill.
Cellux Electronic Co., 3 Traverse Terrace, Malden 48, Mass.
Central Electronic Manufacturers, Inc., 2 Richwood Place, Denville, N. J.
Central Research Laboratories, Inc., Red Wing, Minn.
Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.
Central Transformer Co., 910 W. Jackson Blvd., Chicago 7, Ill.
Centralab Div. of Globe-Union Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.
Century Electronics & Instruments, Inc., P. O. Box 6216, Tulsa 17, Okla.
Century Fan & Ventilator Co., 25 Cedar St., Stamford, Conn.
Ceramaseal Co., Box 25, New Lebanon Center, N. Y.
Cerro de Pasco Corp., 300 Park Ave., New York 22, N. Y.
Chance-Pilkington Optical Works, Pilkington Brothers Ltd., St. Asaph, Flintshire, Great Britain
Chandler & Stedman, 398 Newton St., Waltham 54, Mass.
Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.
Chatham Electronics Div. of Tung-Sol Electric Inc., Livingston, N. J.
Chem-Pure Service Co., 762 Industrial Rd., San Carlos, Calif.
Chemical Commerce, 166 Clifford St., Newark 5, N. J.
Chemical Development Corp., Endicott St., Danvers, Mass.
Chemical Process Co., Redwood City, Calif.
Chempump Corp., 1300 E. Mermaid Lane, Philadelphia 18, Pa.
Chicago Aerial Industries, Inc., 1980 Hawthorne Ave., Melrose Park, Ill.
Chicago-Allis Mfg. Corp., 103 N. Green St., Chicago 7, Ill.
Chicago Apparatus Co., 1735 N. Ashland Ave., Chicago 22, Ill.
Chicago Bridge & Iron Co., 1305 W. 105th St., Chicago 43, Ill.
Chicago Gasket Co., 1271 W. North Ave., Chicago 22, Ill.
Chicago Pump Co., 634 Diversey Parkway, Chicago 14, Ill.

NUCLEAR AND ALLIED PRODUCTS

Chicago Standard Transformer Corp., 3501 W. Addison, Chicago 18, Ill.
Chisholm-Ryder Corp., Plastics & Electronics Div., 3800 Highland Ave., Niagara Falls, N. Y.
Christiansen Co., C. B., 164 Pennington St., Newark, N. J.
Christie Electric Corp., 3410 W. 67th St., Los Angeles 43, Calif.
Chromalloy Corp., 450 Tarrytown Rd., White Plains, N. Y.
Chromium Corp. of America, Box 1229, Waterbury 20, Conn.
Cinema Engineering Co., Div. of Aerovox Corp., 1100 Chestnut St., Burbank, Calif.
Cinema-Television Ltd., Worsley Bridge Rd., London, S. E. 26, England
Circuit Instruments, Inc., 1927 First Ave., S., St. Petersburg, Fla.
City Chemical Corp., 132 W. 22nd St., New York, N. Y.
Clarage Fan Co., 719 Porter St., Kalamazoo, Mich.
Clark Bros. Co., Div. of Dresser Operations, Inc., Lincoln Ave. & Fifth St., Olean, N. Y.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Clark Mfg. Co., 1830 E. 38th St., Cleveland 14, Ohio
Clarostat Mfg. Co., Inc., Dover, N. H.
Clary Multiplier Corp., 408 Junipero St., San Gabriel, Calif.
Clay-Adams, Inc., 141 E. 25th St., New York 10, N. Y.
Clegg Laboratories, Div. of Clegg, Inc., Ridgedale & Hanover Aves., Morristown, N. J.
Cleveland Hard Facing, 3047 Stillson Ave., Cleveland 5, Ohio
Clevite Transistor Products, A Div. of The Clevite Corp., 241–257 Crescent St., Waltham 54, Mass.
Clifton Precision Products Co., Broadway & Maple Ave., Clifton Heights, Pa.
Clough Brengle Co., 6014 N. Broadway, Chicago, Ill.
Cohn Corp., Sigmund, 121 S. Columbus Ave., Mt. Vernon, N. Y.
Coleman Engineering Co., 6040 W. Jefferson Blvd., Los Angeles 16, Calif.
Coleman Instruments, Inc., 318 Madison St., Maywood, Ill.
Collier Mfg. Co., Gainesville, Ga.
Collins Radio Co., Cedar Rapids, Iowa
Columbia Electric Mfg. Co., 4519 Hamilton Ave., N. E. Cleveland 14, Ohio
Columbia-National Corp., 70 Memorial Drive, Cambridge 42, Mass.
Columbia Technical Corp., 61–02 31st Ave., Woodside 77, N. Y.
Comar Electric Co., 3349 W. Addison St., Chicago 18, Ill.
Combustion Engineering, Inc., 200 Madison Ave., New York 16, N. Y.
Commercial Filters Corp., 2 Main St., Melrose 76, Mass.
Communication Accessories Co., Leo's Summit, Mo.
Computer Control Co., Inc., 92 Broad St., Wellesley, Mass.
Computer Instruments Corp., 92 Madison Ave., Hempstead, N. Y.
Computer-Measurements Corp., 5528 Vineland Ave., North Hollywood, Calif.
Concrete Fabricators, Inc., 568 Union Commerce Bldg., Cleveland 14, Ohio
Condenser Products Div. of New Haven Clock & Watch Co., 140 Hamilton St., New Haven, Conn.
Condenser Service & Engineering Co., Inc., 150 Observer Highway, Hoboken, N. J.
Conneaut Rubber & Plastic Div. of U. S. Stoneware Co., Commerce St., Conneaut, Ohio
Connecticut Hard Rubber Co., New Haven 9, Conn.
Conoflow Corp., 2100 Arch St., Philadelphia 3, Pa.
Conrad Inc., 141 Jefferson St., Holland, Mich.
Consolidated Electrodynamics Corp., 300 N. Sierra Madre Villa, Pasadena, Calif.
Consolidated Electrodynamics Corp., Rochester Div., 1775 Mt. Read Blvd., Rochester, N. Y.
Consolidated Reactive Metals Inc., 43 W. 46th St., New York 46, N. Y.
Continental Air Filters, Inc., 2520 Holm St., Louisville, Ky.
Continental Copper & Steel Industries, Alloy Fabricators Div., 500 Market St., Perth Amboy, N. J.
Continental-Diamond Fibre Corp., Newark, Del.
Continental Electric Co., Inc., 334 Ferry St., Newark 5, N. J.
Control Products Inc., 306 Sussex St., Harrison, N. J.
Controlled Atmosphere Enclosures Corp., 230–11 141st Ave., Springfield Gardens 13, N. Y.
Controls Co. of America, 2450 N. 32nd St., Milwaukee 45, Wis.
Convair, A Div. of General Dynamics Corp., Fort Worth Div., Fort Worth, Texas
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Cooper Alloy Corp., Bley St. & Ramsey Ave., Hillside 5, N. J.
Cooper Co., D. C., 1467 S. Michigan Ave., Chicago, Ill.
Cooper Metallurgical Associates, Box 3991, Cleveland 20, Ohio
Copes-Vulcan Div. of Blaw-Knox Co., 939 W. 26th St., Erie, Pa.
Corley Co., Inc., The, 220 W. 42nd St., New York 36, N. Y.
Cornelius Co., 550 39th Ave., N. E. Minneapolis 21, Minn.
Cornell-Dubilier Electric Corp., South Plainfield, N. J.
Corning Glass Works, Corning, N. Y.
Corrosite Corp., 64 S. Sixth St., Brooklyn 11, N. Y.
Cosmic Radiation Labs., Inc., 247 Blue Point Ave., Blue Point, N. Y.
Couch Ordnance Inc., Relay Div., 3 Arlington St., North Quincy 71, Mass.
Cox & Co., Inc., 115 E. 23rd St., New York 10, N. Y.
Cramer Controls Corp., Box 83, Centerbrook, Conn.
Crane Co., 836 S. Michigan Ave., Chicago 5, Ill.
Crane Packing Co., 6400 Oakton St., Morton Grove, Ill.
Crawford Fitting Co., 884 E. 140th St., Cleveland 10, Ohio
Croll-Reynolds Engineering Co., 17 John St., New York 38, N. Y.
Cross Co., H., 15 Beekman St., New York 38, N. Y.
Crucible Steel Co. of America, Henry W. Oliver Bldg., P. O. Box 88, Pittsburgh 30, Pa.
Crystal Research Labs., Inc., 29 Aliyn St., Hartford 3, Conn.
Crystals Inc., 123 Woodland Ave., Westwood, N. J.
Cubic Corp., 5575 Kearny Villa Rd., San Diego 11, Calif.
Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.
Curtiss-Wright Corp., Components Sales, 631 Central Ave., Carlstadt, N. J.
Curtiss-Wright Corp., Electronics Div., 631 Central Ave., Carlstadt, N. J.
Curtiss-Wright Corp., Industrial & Scientific Products Div., Fairfield Rd., Caldwell Township, N. J.
Curtiss-Wright Co., Metal Processing Div., 760 Northland Ave., Buffalo, N. Y.
Custom Lubricant Co., 743 Dwight Way, Berkeley 10, Calif.
Custom Scientific Instruments, Inc., P. O. Box 170, Kearny, N. J.
Cutler-Hammer, Inc., 412 N. 12th St., Milwaukee 1, Wis.
Cyclotron Specialties Co., Moraga 8, Calif.

D

D & R Ltd., 402 E. Gutierrez St., Santa Barbara, Calif.
Dage Television Div. of Thompson Products, Inc., 10th & Sheridan, Michigan City, Ind.
Dahl Co., Inc., G. W., Tupelo St., Bristol, R. I.
Dajac Laboratories, The Borden Co., Chemical Div., Leominster, Mass.
Dale Products, Inc., Columbus, Neb.
Dalmotor Co., Div. of Dalmo Victor Div. of Textron Inc., 1375 Clay St., Santa Clara, Calif.
Dalmo Victor Co., 1515 Industrial Way, Belmont, Calif.
Datamatic Corp., 151 Needham St., Newton Highlands 61, Mass.
Daven Co., The, Route 10, Livingston, N. J.
Davis Emergency Equipment Co., Davis Instrument Div., 47 Halleck St., Newark 4, N. J.
Davies Laboratories, Inc., Div. of Minneapolis-Honeywell, 10721 Hanna St., Beltsville, Md.
Davis Regulator Co., 2539 W. Wahtenaw, Chicago 2, Ill.
Davison Chemical Co., Box 488, Pompton Plains, N. J.
Dawe Instruments Ltd., 99 Oxbridge Road, Ealing, London W5, England
Dayless Mfg. Co., 3327 N. Western Ave., Chicago, Ill.
Daystrom, Inc., Daystrom Nuclear Div., P. O. Box 347, West Caldwell, N. J.
Daystrom Transicoil Corp., Worcester, Pa.
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
Dearborn Chemical Corp., 375 Merchandise Mart, Chicago 54, Ill.
DeBothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.
DeJur-Amsco Corp., 45–01 Northern Blvd., Long Island City 1, N. Y.
Delmatel & Son, Inc., J. A., 96–20 222nd St., Queens Village 8, N. Y.
Del Electronics Corp., 521 Homestead Ave., Mount Vernon, N. Y.
Delonium Graphite Co., 134 Elmore Ave., Elizabeth, N. J.
Delta Chemical Works, 21 W. 60th St., New York 23, N. Y.
Delrimo, Inc., 609 Fayette Ave., Mamaroneck, N. Y.
Deltron, Inc., 2905 N. Leithgow St., Philadelphia 23, Pa.
DeMornay-Bonardi, Inc., 780 S. Arroyo Parkway, Pasadena, Calif.
Denison Engineering Div., American Brake Shoe Co., 1160 Dublin Road, Columbus 16, Ohio
DeRewal International Rare Metals Co., 235 N. Front St., Philadelphia 6, Pa.
Detroit Controls Corp., Control Engineering Unit, 560 Providence Highway, Norwood, Mass.
Devco Engineering, Inc., P. O. Box 387, Caldwell, N. J.
DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio
Devtron Engineering, 1 Winslow St., Redwood City, Calif.
DeWitt Development Co., 3008 W. 127th St., Blue Island, Ill.
Dialight Corp., 60 Stewart Ave., Brooklyn 37, N. Y.
Diamond Antenna & Microwave Corp., 7 North Ave., Wakefield, Mass.
Diamond Power Specialty Corp., Lancaster, Ohio
Dice Co., J. W. Englewood 41, N. J.
Dietz Co., Henry G., 12–16 Astoria Blvd., Long Island City 2, N. Y.
Dietz Design & Mfg. Co., Grandview 16, Mo.
Division Lead Co., 7742 W. 61st Place, Summit, Ill.
Donner Scientific Co., 888 Galindo St., Concord, Calif.
Dore, Inc., John L., 5408 Schuler St., Houston, Texas
Dorr-Oliver, Inc., Barry Place, Stamford, Conn.
Douglas Radio Labs., 176 Norfolk Ave., Boston 19, Mass.
Dow Chemical Co., Midland, Mich.
Dow Corning Corp., Midland, Mich.
Doyle & Roth Mfg. Co., Inc., 136–50 24th St., Brooklyn 32, N. Y.
Drakenfeld & Co., B. F., Box 519, Washington, Pa.
Dressen-Barnes Corp., 250 N. Vinedo Ave., Pasadena 8, Calif.
Drico Industrial Corp., 100 8th St., Passaic, N. J.
Driver Co., Wilbur B., 1875 McCarter Highway, Newark 4, N. J.
Driver-Harris Co., 201 Middlesex St., Harrison, N. J.
Du-Co Ceramics Co., Box 587, Butler 8, Pa.
DuMont Labs., Inc., Allen B., 760 Bloomfield Ave., Clifton, N. J.
Dunham-Bush, Inc., 179 South St., West Hartford 10, Conn.
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.
Duralab Equipment Corp., 980 Linwood St., Brooklyn 8, N. Y.
Duralectric Corp., Factory St., Kalamazoo, Mich.
Durant Mfg. Co., 1996 N. Buffum St., Milwaukee 1, Wis.
Durlron Co., Inc., 450 N. Findlay St., Dayton, Ohio
Dyna-Empire, Inc., 1075 Stewart Ave., Garden City, N. Y.
Dynamic Instrument Co., Inc., 28 Carlton St., Cambridge, Mass.
Dynatron Radio Ltd., Castle Hill, Maidenhead, Berks., England

E

E. R. D. Engineering Co., Ltd., Ipswich Rd., Slough, Buckinghamshire, England
E S C Corp., 534 Bergen Blvd., Palisades Park, N. J.
Eagle-Picher Co., Cincinnati, Ohio
Eagle Signal Corp., 202 20th St., Moline, Ill.
Eastern Air Devices, Inc., 385 Central Ave., Dover, N. H.
Eastern Chemical Corp., 34 Spring St., Newark 4, N. J.
Eastern Industries, Inc., 100 Skiff St., Hamden, Conn.
Eastman Kodak Co., 343 State St., Rochester 4, N. Y.
Eaton-Dikeman Co., Mount Holly Springs, Pa.
Eberbach Corp., Ann Arbor, Mich.
Eberline Instrument Div. of Reynolds Electric & Engineering Co., Inc., P. O. Box 279, 805 Early St., Santa Fe, N. M.
Ebert Electronics Corp., 212–26 Jamaica Ave., Queens Village 28, N. Y.
Eclipse Fuel Engineering Co., 1100 Buchanan, Rockford, Ill.
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Eco Engineering Co., 12 New York Ave., Newark 1, N. J.
Edcliff Instruments, Inc., 1711 S. Mountain Ave., Monrovia, Calif.
Eder Instrument Co., Inc., 2293 N. Clybourn Ave., Chicago 14, Ill.
Edgerton, Germeshausen & Grier, Inc., 160 Brookline Ave., Boston 15, Mass.
Edin Co., Inc., 207 Main St., Worcester, Mass.
Edison Industries, Thomas A., Instrument Div., West Orange, N. J.
Edko Electronics Engineering Co., 202 Grand St., Brooklyn 11, N. Y.
Edlow Lead Co., 729 Bank St., Columbus 16, Ohio
Edward Valves, Inc., 1200 W. 145th St., East Chicago, Ind.
Eichner Instruments Co., L. C., 19 Sebago St., Clifton, N. J.
Elcor, Inc., 1501 W. Congress St., Chicago 7, Ill.
Elster Engineering Co., 760 S. 13th St., Newark 3, N. J.
Eitel-McCullough, Inc., San Bruno, Calif.
El Dorado Electronics Co., 1401 Middle Harbor Rd., Oakland, Calif.
Electric Auto-Lite Co., Instrument & Gauge Div., Toledo 1, Ohio
Electric Boat Div., General Dynamics Corp., Groton, Conn.
Electric Indicator Co., Inc., Camp Ave., Springdale, Conn.
Electric Machinery Mfg. Co., 800 Central Ave., Minneapolis 13, Minn.
Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio
Electric Regulator Corp., Norwalk, Conn.
Electric Specialty Co., 211 South St., Stamford, Conn.
Electric Tachometer Corp., 68th & Upland Sts., Philadelphia 42, Pa.
Electrical & Physical Instrument Corp., 42–19 27th St., Long Island City 1, N. Y.
Electro Chemical Engineering & Mfg. Co., 750 N. Broad St., Emmaus, Pa.
Electro Data Div. of Burroughs Corp., 460 Sierra Madre Villa, Pasadena, Calif.
Electro Dynamic Div. of General Dynamics Corp., 163 Avenue A, Bayonne, N. J.
Electro Engineering Products Co., 609 W. Lake St., Chicago, Ill.

Electro-Measurements, Inc., 7524 S. W. Macadam Ave., Portland 1, Ore.
Electro Medical Lab., Inc., South Woodstock 6, Vt.
Electro Metallurgical Co., Div. of Union Carbide Corp., 32 E. 42nd St., New York 17, N. Y.
Electro-Physics Co., 287-L Broadway, New York 7, N. Y.
Electro Products Lab., Inc., 4501 N. Ravenswood, Chicago 6, Ill.
Electro-Pulse, Inc., 11861 Teale St., Culver City, Calif.
Electro Technical Products Div. of Sun Chemical Corp., 113 E. Centre St., Nutley, N. J.
Electromation Co., 1646 18th St., Santa Monica, Calif.
Electronic Associates, Inc., Long Branch, N. J.
Electronic Communications, Inc., 1501 72nd St., N., St. Petersburg, Fla.
Electronic Control Corp., 1573 E. Forest, Detroit 7, Mich.
Electronic Engineering Co. of California, 1601 E. Chestnut St., Santa Ana, Calif.
Electronic Measurements Co., Inc., Lewis St. & Maple Ave., Eatontown, N. J.
Electronic Mechanics, Inc., 101 Clifton Blvd., Clifton, N. J.
Electronic Processes Corp., 2190 Folsom St., San Francisco 10, Calif.
Electronic Products Co., 111 E. Third St., Mount Vernon, N. Y.
Electronic Tube Corp., 1200 E. Mermaid Lane, Philadelphia 18, Pa.
Electronics Research Labs., 85 Surrey St., Brighton 35, Mass.
Electronized Chemicals Corp., 846 Lafforts Ave., Brooklyn 3, N. Y.
Electrons, Inc., 127 Sussex Ave., Newark 3, N. J.
Elgin National Watch Co., Electronics Div., 2435 N. Naomi St., Burbank, Calif.
Elgin Softener Corp., 179 S. Grove Ave., Elgin, Ill.
Elliott Brothers (London) Ltd., Century Works, Lewisham, London, S. E. 13, England
Elliott Co., Jeanette, Pa.
Ellis and Watts Products, Inc., Monroe at Spencer, Cincinnati 36 (Rossmoyne), Ohio
Elm Laboratories, 10 Washington Ave., Hastings-on-Hudson, N. Y.
Elmes Engineering Div. of American Steel Foundries, 1150 Tennessee Ave., Cincinnati 29, Ohio
El-Tronics, Inc., Suburban Station Bldg., Philadelphia, Pa.
Embassy Engineering Corp., 673 Elton Ave., New York 55, N. Y.
Emerson & Cuming Inc., 869 Washington St., Canton, Mass.
Emerson Plastics Corp., 1383 Seabury Ave., Bronx 61, N. Y.
Empire Devices Products Corp., Amsterdam, N. Y.
Endevco Corp., 161 E. California St., Pasadena, Calif.
Engelhard, Inc., Charles, 850 Passaic Ave., East Newark, N. J.
Engineered Electronics Co., 506 E. First St., Santa Ana, Calif.
Environmental Equipment Corp., 369 Linden St., Brooklyn 27, N. Y.
Epco Electronics, Inc., 140 Liberty St., New York, N. Y.
Epic, 154 Nassau St., New York 38, N. Y.
Epsco, Inc., 588 Commonwealth Ave., Boston 15, Mass.
Ercona Corp., 551 Fifth Ave., New York, N. Y.
Erdco Engineering Corp., Addison, Ill.
Ericssons Telephones, Ltd., Instrument Div., High Church St., New Basford, Nottingham, England
Erie Resistor Corp., 644 W. 12th St., Erie, Pa.
Ertel Engineering Corp., Kingston 31, N. Y.
Essex Electronics, Springfield Ave., Berkeley Heights, N. J.
Estorline-Angus Co., Inc., P. O. Box 596, Indianapolis 6, Ind.
Evans Pipe Co., The, 23 Newport Ave., Uhrichsville, Ohio
Exact Weight Scale Co., 838 E. Town St., Dept. A, Columbus 15, Ohio

F

Factory Service Co., 4615 N. 21st St., Milwaukee, Wis.
Fairbanks Co., The, 393 Lafayette St., New York 3, N. Y.
Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.
Fairchild Camera & Instrument Corp., Reconnaissance Systems Div., Nuclear Instrumentation Dept., 5 Aerial Way, Syosset, N. Y.
Fairchild Controls Corp., Components Div., 225 Park Ave., Hicksville, N. Y.
Falk & Co., Ltd., M., Emafco House, Bell St., Reigate (Surrey), England
Falls Industries, Inc., 31857 Aurora Rd., Solon, Ohio
Falstrom Company, 7 Falstrom Court, Passaic, N. J.
Fansteel Metallurgical Corp., North Chicago, Ill.
Farmer Electric Products Co., Inc., 2300 Washington St., Newton Lower Falls, Mass.
Farnsworth Electronics Co., Div. of IT&T, Fort Wayne, Ind.
Farnsworth Electronics Co., Pacific Div., 815 San Antonio Rd., Palo Alto, Calif.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farris Engineering Co., 400 Commercial Ave., Palisades Park, N. J.
Fasco Industries, Inc., Rochester 2, N. Y.
Federal Mfg. & Engineering Corp., 1055 Stewart St., Garden City, N. Y.
Federal Telephone & Radio Co., A Div. of IT&T, 100 Kingsland Rd., Clifton, N. J.
Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.
Feller Engineering & Mfg. Co., 6026 N. Monticello Ave., Skokie, Ill.
Felt Products Mfg. Co., 7450 N. McCormick Blvd., P. O. Box 8609, Chicago 80, Ill.
Fenn Manufacturing Co., The, 200 Fenn Rd., Newington, Conn.
Fenwal Inc., 120 Pleasant St., Ashland, Mass.
Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
Fielden Electronics Ltd., Paston Rd., Whytenshawe, Manchester, England
Filo Color & Chemical Co., 347 Madison Ave., New York 17, N. Y.
Fine Chemical Co., Inc., 250 W. 57th St., New York 19, N. Y.
Finnell System Inc., 500 East St., Elkhart, Ind.
Firth Sterling, Inc., 3113 Forbes St., Pittsburgh 30, Pa.
Fischer & Porter Co., 50 Warminster Rd., Hatboro, Pa.
Fish-Schurman Corp., 75 Portman Rd., New Rochelle, N. Y.
Fisher Engineering, Inc., 3060 U. S. 24 East, P. O. Box 327, Huntington, Ind.
Fisher Governor Co., Marshalltown, Iowa
Fisher Research Laboratory, Inc., Box 640, Palo Alto, Calif.
Fisher Scientific Co., 709 Forbes St., Pittsburgh 19, Pa.
Flanders Filters, Inc., Riverhead, N. Y.
Fleischman, Burd & Co., Inc., 22 W. 48th St., New York 36, N. Y.
Flexeust Co., 100 Park Ave., New York 17, N. Y.
Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.
Floquil Products, Inc., Cobleskill, N. Y.
Fluke Mfg. Co., Inc., John, 1111 W. Nickerson St., Seattle 99, Wash.
Fluor Products Co., 1200 E. Washington Blvd., Whittier, Calif.
Foote Mineral Co., 18 W. Chelten Ave., Philadelphia 44, Pa.
Ford Instrument Co., Div. of Sperry-Rand Corp., 31-10 Thompson Ave., Long Island City, N. Y.
Forro Scientific Co., The, 833 Lincoln St., Evanston, Ill.
Foster Engineering Co., 835 Lehigh Ave., Union, N. J.
Foster Wheeler Corp., Nuclear Power Project, 165 Broadway, New York 6, N. Y.
Foxboro Co., 38 Neponset Ave., Foxboro, Mass.
Franklin Electronics, Inc., E. Fourth St., Bridgeport, Pa.
Fredericks Co., George E., Bethayres, Pa.
Freed Transformer Co., Inc., 1726 Weirfield St., Brooklyn 27, N. Y.
Frenchtown Porcelain Co., Frenchtown, N. J.
Friez Instrument Div. of Bendix Aviation Corp., 1454 Taylor Ave., Baltimore 4, Md.
Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.
Furzehill Laboratories Ltd., 57, Clarendon Rd., Watford, Herts, England

G

G-M Laboratories, Inc., 4336 N. Knox Ave., Chicago 41, Ill.
G-V Controls, Inc., 28 Hollywood Plaza, East Orange, N. J.
Gaertner Scientific Corp., 1237 Wrightwood Ave., Chicago, Ill.
Gallenkamp & Co., Ltd., A., Sun St., London, E. C. 2, England
Garde Mfg. Co., 588 Eddy St., Providence 3, R. I.
Garlock Packing Co., The, Palmyra, N. Y.
Gast Mfg. Corp., 137 Hinkley St., Benton Harbor, Mich.
Gates & Co., Inc., George W., Hempstead Turnpike & Lucille Ave., Franklin Square, N. Y.
Geigy Industrial Chemicals, Saw Mill River Rd., Ardsley, N. Y.
Geister Laboratories, P. O. Box 252, Menlo Park, Calif.
Gems Co., P. O. Box 222, Newinton, Conn.
General Alloys Co., 405 W. First St., Boston 27, Mass.
General American Transportation Corp., 135 S. La Salle, Chicago, Ill.
General Atomic Div. of General Dynamics Corp., P. O. Box 608, San Diego 12, Calif.
General Automatic Corp., 12 Carlton Ave., Mountain View, N. J.
General Biochemicals Inc., Laboratory Park, Chagrin Falls, Ohio
General Cable Corp., 420 Lexington Ave., New York 17, N. Y.
General Cement Mfg. Co., Div. of Textron Inc., 400 S. Wyman St., Rockford, Ill.
General Ceramics Corp., 250 Crows Mill Rd., Keasbey, N. J.
General Central Company, 1200 Soldiers Field Rd., Boston 34, Mass.
General Controls Co., 801 Allen Ave., Glendale 1, Calif.
General Electric Co., Air Conditioning Div., 5 Lawrence St., Bloomfield, N. J.
General Electric Co., Apparatus Sales Div., 1 River Rd., Schenectady 5, N. Y.
General Electric Co., Atomic Power Equipment Dept., San Jose, Calif.
General Electric Co., Communication Products Dept., Electronics Park, Syracuse, N. Y.
General Electric Co., Construction Materials Div., 1285 Boston Ave., Bridgeport 2, Conn.
General Electric Co., Electronic Components Div., Owensboro, Ky.
General Electric Co., Laminated Products Dept., Coshocton, Ohio
General Electric Co., Lamp Wire & Phosphors Dept., 1331 Chardon Rd., Cleveland 17, Ohio
General Electric Co., Medium AC Motor & Generator Dept., 1 River Rd., Schenectady 5, N. Y.
General Electric Co., Metallurgical Products Dept., 11139 E. Eight Mile Drive, Detroit 32, Mich.
General Electric Co., Nela Park, Cleveland 12, Ohio
General Electric Co., Semiconductor Products Dept., Electronics Park, Syracuse, N. Y.
General Electric Co., Silicone Products Dept., Waterford, N. Y.
General Electric Co., Technical Products Dept., Electronics Park, Syracuse, N. Y.
General Lead Construction Corp., 1800 Harrison Ave., Kearny, N. J.
General Magnetics, Inc., 135 Bloomfield Ave., Bloomfield, N. J.
General Metals, Inc., 358 Goldsboro St., P. O. Box 448, Greensboro, N. C.
General Mills, Inc., Chemical Div., So. Kensington Rd., Kankakee, Ill.
General Mills, Inc., Mechanical Div., 1620 Central Ave., N. E., Minneapolis, Minn.
General Nuclear Co., 4957 Hollywood Blvd., Hollywood 27, Calif.
General Nuclear Corp., 550 Fifth Ave., New York 26, N. Y.
General Photo Products Co., Inc., 15 Summit Ave., Chatham, N. J.
General Precision Laboratory, Inc., 63 Bedford Rd., Pleasantville, N. Y.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
General Radiological, Ltd., 15-18 Clipstone St., London, W. 1, England
General Regulator Corp., 165 Broadway, New York 6, N. Y.
General Scientific Equipment Co., 7516 Limekiln Pike, Philadelphia 50, Pa.
General Transistor Corp., 91-27 138th Place, Jamaica 35, N. Y.
General Ultrasonics Co., 67 Mulberry St., Hartford 3, Conn.
Genisco, Inc., 2233 Federal Ave., Los Angeles 64, Calif.
Gerator Corp., Manassas, Va.
Giannini & Co., Inc., G. M., 918 E. Green St., Pasadena, Calif.
Gibbs Mfg. Co., N. Main St., Janesville, Wis.
Gias-Col Apparatus Co., 711 Hulman St., Terre Haute, Ind.
Glaser Lead Co., Inc., 31 Wyckoff Ave., Brooklyn 27, N. Y.
Glass Engineering Laboratories, 601 O'Neil Ave., Belmont, Calif.
Glidden Co., 900 Union Commerce Bldg., Cleveland 14, Ohio
Goldak Co., Inc., 1544 W. Glenoaks Blvd., Glendale 1, Calif.
Goodrich Chemical Co., B. F., 3135 Euclid Ave., Cleveland 15, Ohio
Goodyear Aircraft Corp., 1210 Massillion Rd., Akron 15, Ohio
Goodyear Tire & Rubber Co., Akron, Ohio
Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.
Goslin Electric & Mfg. Co., 2921 W. Olive St., Burbank, Calif.
Gow-Mac Instrument Co., 100 Kings Rd., Madison, N. J.
Graflex, Inc., 154 Clarissa St., Rochester 8, N. Y.
Gramer-Halldorson Transformer Corp., 2734 N. Pulaski Rd., Chicago 39, Ill.
Grand Transformers, Inc., Grand Haven, Mich.
Graver Tank & Mfg. Co., Inc., 4809 Ted Ave., East Chicago, Ind.
Gray Scientific Div., Remler Co., 2101 Bryant St., San Francisco 10, Calif.
Great Lakes Carbon Corp., 18 E. 48th St., New York, N. Y.
Great Lakes Electric Mfg. Co., 17 S. Desplaines St., Chicago 6, Ill.
Greer Hydraulics, Inc., International Airport, Jamaica 30, N. Y.
Grieve-Hendry Co., Inc., 1401-17 W. Carroll Ave., Chicago 7, Ill.
Grinnell Corp., 260 W. Exchange St., Providence 1, R. I.
Griscom-Russell Co., Massillon, Ohio
Grover Co., The, 23525 W. Eight Mile Rd., Detroit 19, Mich.
Guardian Electric Co., 1625 W. Walnut St., Chicago 12, Ill.
Gudeman Co., 340 W. Huron St., Chicago 10, Ill.
Gulton Industries, Durham Ave., Metuchen, N. J.

H

H-B Instrument Co., American & Bristol Sts., Philadelphia 40, Pa.
Hacker & Co., Inc., William J., 82 Beaver St., New York 5, N. Y.
Hagan Chemical & Controls, Inc., 323 Fourth Ave., Pittsburgh 22, Pa.

NUCLEAR AND ALLIED PRODUCTS

Halody Electronics Co., 57 William St., New York 5, N. Y.
Hallamore Electronics Co., 360 Merchandise Mart, Chicago 54, Ill.
Hallett Mfg. Co., 5910 Bowcraft Ave., Los Angeles 16, Calif.
Hallicrafters, Inc., 4401 W. Fifth Ave., Chicago 24, Ill.
Hamer Valves, Inc., 2919 Gardenia Ave., Long Beach 6, Calif.
Hamilton Co., 1134 Whitley St., Whittier, Calif.
Hamilton-Kent Mfg. Co., Kent, Ohio
Hamilton Mfg. Co., Two Rivers, Wis.
Hammel-Dahl Co., Warwick Industrial Park, Providence 5, R. I.
Hamner Electronics Co., Box 531, Princeton, N. J.
Handy & Harman, 82 Fulton St., New York 38, N. Y.
Hanna Engineering Works, 1767 N. Elston Ave., Chicago 22, Ill.
Hannifin Corp., 619D S. Wolf Rd., Des Plaines, Ill.
Hanson-Gorrill-Brian, Inc., 82 Hazel St., Glen Cove, N. Y.
Harbison-Walker Refractories Co., Farmers Bank Bldg., Pittsburgh 22, Pa.
Hardwick, Hindle, Inc., 40 Herman St., Newark 5, N. J.
Harper Co., H. M., 8200 Lehigh, Morton Grove, Ill.
Harper Electric Furnace Corp., 57 River St., Buffalo 2, N. Y.
Harlss, Granta Terrace, Stapleford, Cambridge, England
Harper Engineering Co., 2330 Michigan Ave., Santa Monica, Calif.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio
Harty Co., Inc., R. V., 1433 Sloman Ave., Detroit 11, Mich.
Hastings-Raydist, Inc., Newcomb Ave., Hampton, Va.
Hathaway Instrument Div., Hamilton Watch Co., 5800 E. Jewell, Denver, Colo.
Havag Industries, Inc., Halocarbon Div., 950 Greenbank Rd., Wilmington 8, Del.
Haws Drinking Faucet Co., 1439 Fourth St., Berkeley 10, Calif.
Haydon Co., A. W., The, 232 N. Elm St., Waterbury, Conn.
Haydon Mfg. Co., 245 E. Elm St., Torrington, Conn.
Haynes Stellite Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York, N. Y.
Hays Corp., Michigan City 39, Ind.
Hays Mfg. Co., 814 W. 12th St., Erie, Pa.
Hayward Scientific Glass Corp., 217 N. Magnolia Ave., Whittier, Calif.
Health Physics Service, Inc., 1111 Law St., Baltimore 2, Md.
Heath Company, Benton Harbor, Mich.
Heatron, Inc., 333 Eberts Lane, York, Pa.
Heavy Minerals Co., 4000 N. Hawthorne St., Chattanooga, Tenn.
Helland Div. of Minneapolis-Honeywell Regulator Co., 5200 E. Evans Ave., Denver 22, Colo.
Helse Bourdon Tube Co., Inc., 1 Brook Rd., Newton, Conn.
Helicoid Gage Div., American Chain & Cable Corp., 929 Connecticut Ave., Bridgeport 2, Conn.
Helipot Corp., Newport Beach, Calif.
Hermaseal Co., Inc., 1101 Lafayette St., Elkhart, Ind.
Hett Associates, Inc., 603 Grand Ave., Englewood, N. J.
Hevi-Duty Electric Co., 2040 W. Wisconsin Ave., Milwaukee 1, Wis.
Hewlett-Packard Co., 275 Page Hill Rd., Palo Alto, Calif.
Hickok Electrical Instruments Co., 10514 Dupont Ave., Cleveland 8, Ohio
Hi-Q, Inc., Bradley Field, Windsor Locks, Conn.
High Vacuum Equipment Corp., 2 Churchill Rd., Hingham, Mass.
High Voltage Engineering Corp., S. Bedford St., Burlington, Mass.
Highland Engineering Co., 91 Magnolia Ave., Westbury, N. Y.
Highside Chemicals, Inc., 10 Colfax Ave., Clifton, N. J.
Hild Floor Machine Co., 1217 W. Washington Blvd., Chicago, Ill.
Hilger & Watts, Ltd., 98 St. Pancras Way, London, N. W. 1, England
Hill Co., C. E., 35 W. Grand River, Detroit 26, Mich.
Hill & Co., E. Vernon, P. O. Box 189, Lake Geneva, Wis.
Hillis McCanna Co., 2395 W. Nelson St., Chicago, Ill.
Hirschman-Pohle Co., Inc., 115 Lent Ave., Le Roy, N. Y.
Hitemp Wires, Inc., 26 Windsor Ave., Mineola, N. Y.
Hogan Laboratories, Inc., 155 Perry St., New York 14, N. Y.
Hoke, Inc., 233 S. Dean St., Englewood, N. J.
Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.
Hooker Electrochemical Co., 4721 Buffalo Ave., Niagara Falls, N. Y.
Hooper Chemical Corp., P. O. Box 313, Rutherford, N. J.
Hoosier Tarpaulin & Canvas Goods Co., 1302 W. Washington Ave., Indianapolis 6, Ind.
Hoppe Engineering Co., 1 High St., Greensboro, Ind.
Houghton Laboratories, Inc., Houghton Ave., Olean, N. Y.
Howard Industries, Inc., Divisions Cyclohm Motor Corp., Electric Motor Corp., Racine, Wis.
Hudson Tool & Die Co., Inc., 28 Malvern St., Newark 5, N. J.
Huggins Laboratories Inc., 711 Hamilton Ave., Menlo Park, Calif.
Hughes Products, Los Angeles 45, Calif.
Humboldt Mfg. Co., 2014 N. Whipple St., Chicago 47, Ill.
Hunt, Rodney Machine Co., 46 Mill St., Orange, Mass.
Hunter-Bristol Corp., Bristol, Pa.
Huppert Co., K. H., 6830 S. Cottage Grove Ave., Chicago 37, Ill.
Huron Industries, P. O. Box 557, Port Huron, Mich.
Hycon-Eastern, Inc., 75 Cambridge Parkway, Cambridge 42, Mass.
Hycon Electronics Inc., P. O. Box D, Pasadena, Calif.
Hycor Div. of International Resistance Co., 12970 Bradley Ave., Sylmar, Calif.

I

Identification Service Corp., 144 W. 46th St., New York, N. Y.
Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, Ill.
Illinois Testing Labs., 420 N. LaSalle St., Chicago, Ill.
Illinois Water Treatment Co., 858 Cedar St., Rockford, Ill.
Imhof Ltd., Alfred, 112 New Oxford St., London, W. C. 1, England
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.
Indiana Steel Products Co., The, Valparaiso, Ind.
Indium Corp. of America, 1676 Lincoln Ave., Utica 4, N. Y.
Industrial Condenser Corp., 3243 N. California Ave., Chicago 18, Ill.
Industrial Development Labs., Inc., 17 Pollock Ave., Jersey City 5, N. J.
Industrial Devices, Inc., 982 River Rd., Edgewater, N. J.
Industrial Engineering & Equipment Co., 711 S. Theresa, St. Louis 3, Mo.
Industrial Filter & Pump Co., 5918 Ogden Ave., Chicago 50, Ill.
Industrial Instrument Div., Mandrel Industries, Inc., 5134 Glenmont, Houston, Texas
Industrial Instruments, Inc., 89 Commerce Rd., Cedar Grove, N. J.
Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio
Industrial Test Equipment Co., 55 E. 11th St., New York 3, N. Y.
Industrial Timer Corp., 1407 McCarter Highway, Newark, N. J.
Industrial Transformer Corp., Gouldsboro, Pa.
Industrial Tubes, 321 Stevens St., Geneva, Ill.
Industro Transistor Corp., 649 Broadway, New York 12, N. Y.
Industrol Corp., Div. of Trinity Equipment Corp., 472 Westfield Ave., E., Roselle Park, N. J.
Inertol Co., Inc., 484-7 Frelinghuysen Ave., Newark 12, N. J.
Inflico, Inc., P. O. Box 5033, Tucson, Ariz.
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Instrument Center, 55-G Roade St., New York 7, N. Y.
Instrument Development Lab., Inc., 67 Mechanic St., Attleboro, Mass.
Instrument Resistors Co., 1036 Commerce Ave., Union, N. J.
Instrumentation Associates, 17 W. 60th St., New York 23, N. Y.
Instruments, Inc., 122 N. Madison, P. O. Box 556, Tulsa, Okla.
Instruments for Industries, Inc., 150 Glen Cove Rd., Mineola, N. Y.
Insul-Mastic Corp. of America, 7750 W. 61st Place, Summit, Ill.
Intercontinental Dynamics Corp., 170 Coolidge Ave., Englewood, N. J.
Interelectronics Corp., 2432 Grand Concourse, New York 58, N. Y.
International Engineering, Inc., 1200 Bolander Ave., Dayton, Ohio
International Equipment Co., 1284 Soldiers Field Rd., Boston 35, Mass.
International Instruments, Inc., P. O. Box 2954, New Haven 15, Conn.
International Nickel Co., Inc., 67 Wall St., New York 5, N. Y.
International Pump & Machine Works, 81 Dorse Ave., Livingston, N. J.
International Rectifier Corp., 1521 E. Grand Ave., El Segundo, Calif.
International Register Co., 2620 W. Washington Blvd., Chicago 12, Ill.
International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.
International Telephone & Telegraph Corp., Components Div., Federal Tubes, 100 Kingsland Rd., Clifton, N. J.
International Telephone & Telegraph Corp., Components Div., Semi-Conductor Div., 100 Kingsland Rd., Clifton, N. J.
International Telephone & Telegraph Corp., Industrial Products Div., Federal Instruments, 100 Kingsland Rd., Clifton, N. J.
International Telephone & Telegraph Corp., Industrial Products Div., 15191 Bledsoe St., San Fernando, Calif.
Intrusion-Prepakt, 568 Union Commerce Bldg., Cleveland 14, Ohio
Iron Fireman Mfg. Co., Electronics Div., 2838 Southeast Ninth Ave., Portland 2, Ore.
Irvington Varnish & Insulator, Div. of Minnesota Mining & Mfg. Co., 10 Argyle Terrace, Irvington, N. J.
Isolantite Mfg. Corp., Stirling, N. J.
Isomet Corp., 118 Union St., Palisades Park, N. J.
Isotope Accessories Co., Box 9354, Philadelphia 39, Pa.
Isotope Developments Ltd., Beenham Grange, Aldermaston Wharf, nr. Reading, Berks, England
Isotope Products (Instrument Div.), Inc., Buffalo, N. Y.
Isotope Products Ltd., Davis Rd., Oakville, Ontario, Canada
Isotopes Specialties Co., 170 W. Providencia, Burbank, Calif.

J

J-B-T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.
Jackes-Evans Mfg. Co., 4427 Geraldine, St. Louis 15, Mo.
Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio
Jacobs Instrument Co., 4718 Bethesda Ave., Bethesda, Md.
James, Pond & Clark, Inc., 2181 E. Foothill Rd., Pasadena, Calif.
James Vibropowr Co., 4036 N. Rockwell St., Chicago 18, Ill.
Jamesbury Corp., 45 New St., Worcester 5, Mass.
Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.
Jeffers Electronics Div., Speer Carbon Co., DuBois, Pa.
Jelliff Mfg. Corp., C. O., 200 Pequot Ave., Southport, Conn.
Jennings Radio Mfg. Corp., 970 McLaughlin Ave., P. O. Box 1278, San Jose 12, Calif.
Jerguson Gage & Valve Co., Adams St., Burlington, Mass.
Johns-Manville, 22 E. 40th St., New York 16, N. Y.
Johnson & Associates, Inc., William B., P. O. Box 415, Mountain Lakes, N. J.
Johnson Co., E. F., Waseca, Minn.
Johnson Corp., 809 Wood St., Three Rivers, Mich.
Johnson-Service Co., 507 E. Michigan St., Milwaukee 1, Wis.
Johnson-Williams, Inc., 2625 Park Blvd., Palo Alto, Calif.
Johnston & Funk Titanium Corp., W. Komrow Ave., Wooster, Ohio
Jones Co., Dr. F., 55 W. 42nd St., New York 36, N. Y.
Jordan Corp., Div. of OPW Corp., 6013 Wiehe Rd., Cincinnati 13, Ohio
Jordan Electronics A Div. of The Victoreen Instrument Co., 5025 W. Mission Rd., Alhambra, Calif.
Joy Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.

K

K-F Development Co., 2606 Spring St., Redwood City, Calif.
K-V Transformer Co., 20 E. Franklin St., Danbury, Conn.
Kahl Scientific Instrument Corp., P. O. Box 1166, El Cajon, Calif.
Kahlenberg Bros. Co., 12th & Monroe Sts., Two Rivers, Wis.
Kahn & Co., Inc., 541 Windsor St., Hartford 1, Conn.
Kaiser Engineers, Atomic Energy Div. of Henry J. Kaiser Co., Oakland 12, Calif.
Kaman Aircraft Corp., Nuclear Div., 2013 Ridgecrest Drive, S. E., Albuquerque, N. M.
Kawecki Chemical Co., Inc., 220 E. 42nd St., New York, N. Y.
Kay Electric Co., 14 Maple Ave., Pine Brook, N. J.
Kay & MacDonald, Inc., 11-15 Central Ave., West Orange, N. J.
Kearfott Co., Inc., Engineering & Sales Div., 1378 Main Ave., Clifton, N. J.
Kearfott Co., Inc., Western Div., 253 N. Vinedo Ave., Pasadena 8, Calif.
Keckley Co., O. C., 3400 Cleveland St., Skokie, Ill.
Keithley Instruments, Inc., Dept. N8, 12415 Euclid Ave., Cleveland 6, Ohio
Kelley & Co., O. O., 98 Taylor St., Dorchester, Mass.
Kellogg Switchboard & Supply Co., 79 W. Monroe, Chicago 3, Ill.
Kendall Co., The, Polykon Sales Div., 309 W. Jackson Blvd., Chicago 6, Ill.
Kennametal, Inc., Latrobe, Pa.
Kennecott Copper Co., 161 E. 42nd St., New York, N. Y.
Kepco Laboratories, Inc., 131-38 Sanford Ave., Flushing 55, N. Y.
Kessler Chemical Co., Inc., State Rd. & Cottman Ave., Philadelphia 15, Pa.
Kewaunee Mfg. Co., 5083 S. Center St., Adrian, Mich.
Keystone Carbon Co., Inc., Saint Marys, Pa.
Keystone Compressor Co., 8417 Hagerman St., Philadelphia 36, Pa.
Keystone Electronics Co., 65 7th Ave., Newark, N. J.
Keystone Electronics Corp., 423 Broome St., New York 13, N. Y.
Keystone Products Co., 904-6 23rd St., Union City, N. J.
Kidde & Co., Inc., Walter, 377 Main St., Belleville 9, N. J.
Kidde Nuclear Laboratories, Inc., Walter, 975 Stewart Ave., Garden City, N. Y.

Kinley & Mueller Co., Inc., Genung St., Middletown, N. Y.
Kinetic Instrument Co., 3250 Skokie Valley Rd., Highland Park, Ill.
Kinetics Corp., 2 Churchill Rd., Hingham, Mass.
King Electric Equipment Co., 9123 Inman Ave., Cleveland 5, Ohio
King Laboratories, Inc., 127 Solar St., Syracuse 3, N. Y.
Kinney Mfg. Div., The New York Air Brake Co., Jamaica Plain, 3529 Washington St., Boston 30, Mass.
Kin Tel (Kay Lab), 5725 Kearny Villa Rd., San Diego 11, Calif.
Kip Electronics Corp., 29 Holly Place, Box 562, Stamford, Conn.
Kirchberger & Co., Inc., M., 82-92 W. Forest Ave., Englewood, N. J.
Knapp Mills Inc., 23-15 Borden Ave., Long Island City 1, N. Y.
Knight, Maurice A., 171 Kelly Ave., Akron, Ohio
Knopp, Inc., 1307 66th St., Emeryville 8, Calif.
Kollmorgen Optical Corp., 347 King St., Northampton, Mass.
Komline-Sanderson Engineering Corp., Holland Ave., Peapack, N. J.
Kontes Glass Co., Dept. P-159, Vineland, N. J.
Koontz-Wagner Electric Co., N. Michigan & Marion, South Bend, Ind.
Korrect Kutting Mfg. Co., 457 Park Blvd., Glen Ellen, Ill.
Koven Fabricators, Inc., 90 E. Dickerson St., Dover, N. J.
Kraftilo Co., Niles, Calif.
Krohn-Hite Instrument Co., 580 Massachusetts Ave., Cambridge 39, Mass.
Kruger Instruments, Harold, P. O. Box 144, San Gabriel, Calif.
Kuljian Corporation, The, 1200 N. Broad St., Philadelphia 21, Pa.
Kulka Electric Mfg. Co., Inc., 633 S. Fulton Ave., Mt. Vernon, N. Y.
Kuprion Mfg. Corp., 395 State St., Binghamton, N. Y.
Kuthe Laboratories, Inc., 730 S. 13th St., Newark, N. J.
Kybernetes Co., 9 E. 40th St., New York 16, N. Y.

L

L & B Welding Equipment, Inc., 2424 6th St., Berkeley, Calif.
L. O. F. Glass Fibers Co., 1810 Madison Ave., Toledo 1, Ohio
L & S Machine Co., Inc., P. O. Box 317, R. D. #2, Latrobe, Pa.
Labgear (Cambridge) Ltd., Nucleonics Division, Cromwell Rd., Cambridge, England
Labline, Inc., 3070-82 W. Grand Ave., Chicago 22, Ill.
Laboratory Equipment Corp., St. Joseph, Mich.
Laboratory for Electronics, Inc., 75 Pitts St., Boston 14, Mass.
Laconia Div. of Potter & Brumfield, Inc., 54 Mill St., Laconia, N. H.
Ladish Co., 5458 S. Packard Ave., Cudahy, Wis.
Lambda Electronics Corp., 11-11 131st St., College Point 56, N. Y.
Lamotte Chemical Products Co., Chestertown, Md.
Lamsen Corp., Syracuse 1, N. Y.
Landauer, Jr. & Co., R. S., 24 Plaza, Park Forest, Ill.
Landis & Gyr, Inc., 45 W. 45th St., New York 36, N. Y.
Lansdale Tube Co., Div. of Philco Corp., Lansdale, Pa.
Landsverk Electrometer Co., 550-552 W. Garfield Ave., Glendale 4, Calif.
LaPine & Co., Arthur S., 6001 S. Knox Ave., Chicago 29, Ill.
Lapp Insulator Co., Inc., 40 Gilbert St., LeRoy, N. Y.
Laurence Co., Inc., R. G., 134 Summit St., Tenafly, N. J.
Lavoie Laboratories Inc., Matawan-Freehold Rd., Morganville, N. J.
Lawn Electronics Co., E. Freehold Rd., Freehold, N. J.
Lawrence Pumps, Inc., 371 Market St., Lawrence, Mass.
Leach Corp., Inst Div., 18435 Susana Rd., Long Beach, Calif.
Leach Corp., Leach Relay Div., 5915 Avalon Blvd., Los Angeles 3, Calif.
Leader Iron Works, Inc., 2110 N. Jasper, Decatur, Ill.
Lear, Inc., 3171 S. Bundy Drive, Santa Monica, Calif.
Leavitt Machine Co., The, 10 E. River St., Orange, Mass.
Lectrohm, Inc., 5561 Northwest Highway, Chicago 30, Ill.
Lee Electric & Mfg. Co., 2806 Clearwater St., Los Angeles 39, Calif.
Leedal Stainless Steel Products, Inc., 2929 S. Halsted St., Chicago 8, Ill.
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia 44, Pa.
Leighton Labs., H. W., York Rd. & Sunset Lane, Hatboro, Pa.
Leitz, Inc., E., 468 Fourth Ave., New York, N. Y.
Lel, Inc., 380 Oak St., Copiague, N. Y.
Leland Electric Co., Div. of American Machine & Foundry Co., 1501 Webster St., Dayton 1, Ohio
Leland, Inc., G. H., 123 Webster, Dayton 2, Ohio
Leland Instruments, Ltd., 22-23 Millbank, Westminster, S. W. 1, London, England
Lenkurt Electric Co., 1105 County Rd., San Carlos, Calif.
Lennard Co., Inc., P. M., 1 Hanson Place, Brooklyn 17, N. Y.
Lepel High Frequency Lab., Inc., 55th St., & 37th Ave., Woodside 77, N. Y.
Leslie Co., 229 Grant Ave., Lyndhurst, N. J.
Levinthal Electronic Products, Inc., Stanford Industrial Park, Palo Alto, Calif.
Lewis Engineering Co., 82 Rubber Ave., Naugatuck, Conn.
Lewis & Kaufman Ltd., 17320 El Rancho Ave., P. O. Box 337, Los Gatos, Calif.
Librascope, Inc., 808 Western Ave., Glendale, Calif.
Liebel-Flarsheim Co., 111 E. Amity Rd., Cincinnati 15, Ohio
Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12, Ill.
Linde Co., Div. of Union Carbide Co., 30 E. 42nd St., New York 17, N. Y.
Lindsey Chemical Co., 272 Ann St., West Chicago, Ill.
Link Aviation, Inc., Binghamton, N. Y.
Liquid Carbonic Corp., 3100 S. Kedzie Ave., Chicago 23, Ill.
Lithium Corp. of America, Inc., 2500 Bond Tower Bldg., Minneapolis 2, Minn.
Littelfuse, Inc., DesPlaines, Ill.
Little, Inc., Arthur D., 30 Memorial Drive, Cambridge 42, Mass.
Litton Engineering Laboratories, P. O. Box 949, Grass Valley, Calif.
Litton Industries, Electronic Equipments Div., 336 N. Foothill Rd., Beverly Hills, Calif.
Litton Industries, Maryland Div., 4910 Calvert Rd., College Park, Md.
Logan Clay Products Co., Box 698, Logan, Ohio
Louthan Mfg. Co., East Liverpool, Ohio
Lunkenheimer Co., The, Beekman St. & Waverly Ave., Cincinnati 14, Ohio
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Lynden Bros., Inc., 85 Zabriskie St., Hackensack, N. J.
Lyon Metal Products, Inc., 10 Montgomery St., Aurora, Ill.

M

McCormick-Selph Associates, 74 Hollister Airport, Hollister, Calif.
Mcintosh Laboratory, Inc., 2 Chambers St., Binghamton, N. Y.
McKenne Laboratories, 2303 Main St., Santa Monica, Calif.
McMillan Industrial Corp., Brownville Avenue Plant, Ipswich, Mass.
M-H Standard Corp., 513-521 Communipaw Ave., Jersey City 4, N. J.
MSH Research Corp., Collery, Pa.
Maas & Waldstein Co., 2121 McCarter Highway, Newark 4, N. J.
Macbeth Instrument Corp., Little Britain Rd., Newburgh, N. Y.
Mackenzie Welton Corp., 478 Pawtucket Ave., Pawtucket, R. I.
MacLeod & Hanopol, Inc., 10 Roland St., Charlestown 29, Mass.
Macklett Laboratories, Inc., 1063 Hope St., Springdale, Conn.
Mackay Inc., A. D., 198 Broadway, New York 38, N. Y.
Magnaflux Corp., 7346 W. Lawrence Ave., Chicago 31, Ill.
Magnatran, Inc., P. O. Box 211, Kearny, N. J.
Magnavox Co., The, Fort Wayne, Ind.
Magna-Pulse Corp., 11 Godwin Ave., Fair Lawn, N. J.
Magnetic Amplifiers, Inc., 632 Tinton Ave., New York 55, N. Y.
Magnetic Instruments Co., 846 Commerce St., Thornwood, N. Y.
Magnetic Research Corp., 200 E. Center St., El Segundo, Calif.
Magnetic Seal Corp., Sewams Rd., Barrington, R. I.
Magnetics, Inc., Box 391, Butler, Pa.
Magnetics Research Co., 255 Grove St., White Plains, N. Y.
Magnetrol Inc., 2110 S. Marshall St., Chicago 23, Ill.
Magtrol, Inc., 240 Seneca St., Buffalo 2, N. Y.
Makepeace Co., D. E., Attleboro, Mass.
Mallinckrodt Chemical Works, Second & Mallinckrodt Sts., St. Louis 7, Mo.
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
Mallory-Schwarzkopf Metals Inc., 320 Yonkers Ave., Yonkers, N. Y.
Mallory-Sharon Titanium Corp., Niles, Ohio
Manning, Maxwell & Moore, Inc., Stratford, Conn.
Manostat Corp., 26 N. Moore St., New York, N. Y.
Mansol Ceramics Co., 140 Little St., Belleville, N. J.
Manson Laboratories, Inc., 207 Greenwich Ave., Stamford, Conn.
Manufacturers Engineering & Equipment Corp., York & Mill Rds., Hatboro, Pa.
Marfre Mfg. Co., 156 W. Washington St., West Chicago, Ill.
Marine Electric Corp., 600 Fourth Ave., Brooklyn, N. Y.
Marine & Industrial Products Co., 1150 W. Marquette Blvd., Chicago 21, Ill.
Marion Electrical Instrument Co., Greiner Field, Manchester, N. H.
Markel & Sons, I. Frank, School House Lane, Norristown, Pa.
Markite Corp., 155 Waverly Place, New York 14, N. Y.
Martin Co., The, Nuclear Div., Baltimore 3, Md.
Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio
Marvel Engineering Co., 7227 N. Hamlin Ave., Chicago 45, Ill.
Marvel-Schebler Products Div. of Borg-Warner Corp., Decatur, Ill.
Maryland Lava Co., Ceramic Dept., Bel Air, Md.
Mason-Neilan, Nahatan St., Norwood, Mass.
Master Builders Co., 7016 Euclid Ave., Cleveland, Ohio
Matheson Co., 932 Paterson Plank Rd., East Rutherford, N. J.
Matthew Laboratories, 146 Riverdale Ave., Yonkers, N. Y.
Maxim Silencer Co., The, Homestead Ave., Hartford, Conn.
Maxson Corp., W. L., The, 460 W. 34th St., New York 1, N. Y.
Maxson Instruments Corp., Sub. of The W. L. Maxson Corp., 47-37 Austell Place, Long Island City 1, N. Y.
Maywood Chemical Works, 111 W. Hunter Ave., Maywood, N. J.
Measurement Engineering Ltd., Amprior, Ontario, Canada
Measurements Corp., Boonton, N. J.
Meditronic Instruments, 4867 Hollywood Blvd., Hollywood 29, Calif.
Mellon Inc., George T., 132 Nassau St., New York 38, N. Y.
Menlo Research Laboratory, 538 Phelan Ave., San Jose, Calif.
Mepco Inc., 35-37 Abbott Ave., Morristown, N. J.
Mercold Corp., 4201 Belmont Ave., Chicago 41, Ill.
Merck & Co., Inc., Chemical Div., 857 Lincoln Ave., Rahway, N. J.
Merck & Co., Ltd., 560 De Courcelle St., Montreal 3, P. Q., Canada
Metal Hydrides, Inc., 12-24 Congress St., Beverly, Mass.
Metal Textile Corp., 647 E. First Ave., Roselle, N. J.
Metal & Thermit Corp., Rahway, N. J.
Metalab Equipment Co., Div. of Norbute Corp., 282 Duffy Ave., Hicksville, N. Y.
Metallizing Engineering Co., 1101 Prospect Ave., Westbury, N. Y.
Metallo Chemical Corp., 117 Liberty St., New York 6, N. Y.
Metallo Gasket Co., 13 Bethany St., New Brunswick, N. J.
Metals & Controls Corp., General Plate Div., 40 Forest St., Attleboro, Mass.
Metals & Controls Corp., Nuclear Products Div., 40 Forest St., Attleboro, Mass.
Metals & Controls Corp., Spencer Thermostat Div., 40 Forest St., Attleboro, Mass.
Metals Disintegrating Co., Inc., P. O. Box 290, Elizabeth, N. J.
Meters, Inc., 5353 N. Keystone Ave., Indianapolis 20, Ind.
Methode Manufacturing Corp., 2021 W. Churchill St., Chicago 47, Ill.
Mettler Instrument Corp., Hightstown, N. J.
Metz Refining Co., 369 Mulberry St., Newark 2, N. J.
Mica Insulator Co., 797 Broadway, Schenectady 1, N. Y.
Micanite & Insulators Co., Ltd., The, Blackhorse Lane, Walthamstow, London, E. 17, England
Michigan Chemical Corp., Rare Earth & Thorun Div., St. Louis, Mich.
Mico Instrument Co., 82 S. Trowbridge St., Cambridge 38, Mass.
Microchemical Specialty Co., 1834 University Ave., Berkeley 3, Calif.
Micro-Circuits Co., New Buffalo, Mich.
Microdot, Inc., 220 Pasadena Ave., South Pasadena, Calif.
Micro Metallic Corp., 30 Sea Cliff Ave., Glen Cove, N. Y.
Micromold Corp., 1 School St., Yonkers, N. Y.
Mid-Century Instrumatic Corp., 611 Broadway, New York 12, N. Y.
Midwestern Instruments, 41st & Sheridan Rd., Tulsa, Okla.
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Miller Instruments, Inc., William, 325 N. Halstead Ave., Pasadena 8, Calif.
Miller & Son., Inc., Franklin P., 36 Meadow St., East Orange, N. J.
Millipore Filter Corp., 36 Pleasant St., Watertown 72, Mass.
Milwaukee Glass Works, Inc., 2338 N. 30th St., Milwaukee, Wis.
Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.
Miniature Precision Bearings, Inc., Keene, N. H.
Minimax Co., 5905 N. Clark St., Chicago 26, Ill.
Minitron Corp., 5 Oliver St., Newark 2, N. J.
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Aeronautical Div., 1433 Stinson Blvd., Minneapolis, Minn.
Minneapolis-Honeywell Regulator Co., Boston Div., 1400 Soldiers Field Rd., Boston 35, Mass.
Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne & Windrim Aves., Philadelphia 44, Pa.
Minneapolis-Honeywell Regulator Co., Ordnance Div., 600 2nd St., Hopkins, Minn.

NUCLEAR AND ALLIED PRODUCTS

Minneapolis-Honeywell Regulator Co., Rubicon Instruments, Ridge Ave. at 35th St., Philadelphia 32, Pa.
Minnesota Mining & Mfg. Co., Jersey City Chemical Div., 75 Drayers St., Jersey City 3, N. J.
Mitronics, Inc., 1290 Central Ave., Hillside, N. J.
Mixing Equipment Co., Inc., 192 Mt. Read Blvd., Rochester 11, N. Y.
Model Rectifier Corp., 1065 Utica Ave., Brooklyn 3, N. Y.
Modern Laboratory Equipment Co., 1809–11 First Ave., New York 28, N. Y.
Modern Swimming Pool Co., Inc., 1 Holland Ave., White Plains, N. Y.
Modine Mfg. Co., Industrial Div., Racine, Wis.
Moloney Electric Co., 5390 Bircher Blvd., St. Louis 20, Mo.
Monroe Calculating Machine Co., Hanover Ave., Morris Plains, N. J.
Monsanto Chemical Co., Inorganic Chemical Div., 710 N. 12th Blvd., St. Louis 1, Mo.
Monsanto Chemical Co., Plastics Div., 600 Monsanto Ave., Springfield 2, Mass.
Moore & Co., Samuel, Mantua, Ohio
Moore Corp., John B., Box 3, Nutley 10, N. J.
Moorehead Machinery & Boiler Co., 3477 University Ave., Minneapolis 18, Minn.
Moran Flexible Joint Co., Louisville, Ky.
Morganite, Inc., 33–02 48th Ave., Long Island City 1, N. Y.
Moseley Co., F. L., 409 N. Fair Oaks Ave., Pasadena, Calif.
Motoresearch Co., 1600 Junction Ave., Racine, Wis.
Motorola Communications & Electronics Inc., 4545 W. Augusta Blvd., Chicago 51, Ill.
Motorola, Inc., Semiconductor Products Div., 5005 E. McDowell Rd., Phoenix, Ariz.
Mount Sopris Instrument Corp., 1320 Pearl St., Boulder, Colo.
Muirhead & Co., Ltd., Beckenham, Kent, England
Mullard Overseas Ltd., New Rd., Mitcham Junction, Surrey, England
Mundet Cork Corp., 7101 Tonnelle Ave., North Bergen, N. J.
Murphy & Miller, Inc., 1344 S. Michigan Ave., Chicago 5, Ill.
Mycalex Corp. of America, Clifton Blvd., Clifton, N. J.

N

N. J. E. Corp., 345 Carnegie Ave., Kenilworth, N. J.
NRC Equipment Corp., A Sub. of National Research Corp. 87 Charlemont St., Newton Highlands 61, Mass.
NRD Instrument Co., 6427 Etzel Ave., St. Louis 14, Mo.
Narda Microwave Corp., The, 160 Herricks Rd., Mineola, N. Y.
Narda Ultrasonics Corp., The, Sub. of The Narda Microwave Corp., 158 Herricks Rd., Mineola, N. Y.
Nash Engineering Co., 450 Wilson Rd., South Norwalk, Conn.
Nash & Thompson, Ltd., Oakcroft Road, Chessington, Surrey, England
National Aluminate Corp., 6216 W. 66th Place, Chicago 38, Ill.
National Carbon Co., Div. of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
National Cash Register Co., The, Main & K Sts., Dayton, Ohio
National Ceramic Co., 400 Southard St., Trenton 2, N. J.
National Electrical Instrument Co., 92–21 Corona Ave., Elmhurst, N. Y.
National Instrument Labs., Inc., 6108 Rhode Island Ave., Riverdale, Md.
National Lead Co., 111 Broadway, New York 6, N. Y.
National Radiac, Inc., 479 Washington St., Newark 2, N. J.
National Research Corp., 70 Memorial Drive, Cambridge 42, Mass.
National Spectrographic Labs., Inc., 6300 Euclid Ave., Cleveland 3, Ohio
National Union Electric Corp., Electronics Div., Bloomington, Ill.
National Vulcanized Fibre Co., Wilmington 99, Del.
Navigation Computer Corp., 1621 Snyder Ave., Philadelphia 45, Pa.
Negretti & Zambra, Ltd., 122 Regent St., London, W. 1, England
Nelco Metals, Inc., Canaan, Conn.
Nems-Clarke, Inc., 919 Jesup-Blair Drive, Silver Spring, Md.
Network Mfg. Corp., 213 W. Fifth St., Bayonne, N. J.
Neutronic Associates, 9314 101st Ave., Ozone Park 17, N. Y.
Neutronics Laboratory, Tinley Park, Ill.
Neutronics Research Co., 165 Lake St., Waltham, Mass.
New England Nuclear Corp., 575 Albany St., Boston, Mass.
New England Scientific Instruments Co., Box 408, Cambridge 39, Mass.
New Hermes Engraving Machine Corp., 13–19 University Place, New York 3, N. Y.
New London Instrument Co., P. O. Box 189, New London, Conn.
New Process Metals, 45–65 Manufacturers Place, Newark 5, N. J.
New York Shipbuilding Corp., Camden, N. J.
New York Transformer Co., Inc., Third Ave., Alpha, N. J.
Newark Wire Cloth Co., 351 Verona Ave., Newark 4, N. J.
Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, Calif.
Newport Steel Co., 9th & Lowell Sts., Newport, Ky.
Ney Co., J. M., Drawer 990, Hartford, Conn.
Niagara Filters Div., & Talhurst Centrifugals Div., American Machine & Metals, Inc., East Moline, Ill.
Nopco Chemical Co., 15 Essex St., Harrison, N. J.
Nordberg Mfg. Co., Milwaukee, Wis.
Norden Ketay Corp., Commerce Rd., Stamford, Conn.
Norman Laboratories, Ernst, Williams Bay, Wis.
North Hills Electric Co., Inc., 402 Sagamore Ave., Mineola, N. Y.
Northeast Scientific Corp., 617 Concord Ave., Cambridge 38, Mass.
Norton Co., 1 New Bond St., Worcester 6, Mass.
Nuclear Aids Corp., 612 N. Michigan Ave., Chicago, Ill.
Nuclear-Chicago Corp., 229 W. Erie St., Chicago, Ill.
Nuclear Consultants, Inc., 9842 Manchester Rd., St. Louis 19, Mo.
Nuclear Corp. of America, Inc., 400 Park Ave., New York 17, N. Y.
Nuclear Development Corp. of America, 5 New St., White Plains, N. Y.
Nuclear Development Laboratory, P. O. Box 7034, Kansas City, Mo.
Nuclear-Electronics Corp., 2632–36 W. Cumberland St., Philadelphia 32, Pa.
Nuclear Engineering Ltd., Greenwich Metal Works, London, S. E. 7, England
Nuclear Enterprises, Ltd., 1750 Pembina Highway, Winnepeg, Canada
Nuclear Materials & Equipment Corp., 680 Warren Ave., Apollo, Pa.
Nuclear Measurements Corp., 2460 N. Arlington Ave., Indianapolis 18, Ind.
Nuclear Metals, Inc., 224 Albany St., Cambridge 39, Mass.
Nuclear Research Applications Ltd., "Emefco" House, Bell St., Reigate (Surrey), England
Nuclear Research Corp., Southampton, Pa.
Nuclear Science Associates, 55 Manor Drive, Newark 6, N. J.
Nuclear Science & Engineering Corp., P. O. Box 1091, Pittsburgh 36, Pa.
Nucledyne Corp., Sub. of Cook Electric Co., 8100 N. Monticello Ave., Skokie, Ill.
Nucleonic Corp. of America, 196 DeGraw St., Brooklyn 31, N. Y.
Nucor Research, Inc., 2421 Walcott, Ferndale, Mich.
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.
Nurnberg Thermometer Co., Inc., 124 Livingston St., Brooklyn, N. Y.

O

Oakite Products, Inc., 19 Rector St., New York 6, N. Y.
Offner Electronics Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.
Ohaus Scale Corp., 1050 Commerce Ave., Union, N. J.
Ohmart Corp., 2236 Bogen St., P. O. Box 67, Sta. B, Cincinnati 22, Ohio
Ohmite Mfg. Co., 3601 Howard St., Skokie, Ill.
Okadee Valve Co., 332 S. Michigan Ave., Chicago 4, Ill.
Olin Mathieson Chemical Corp., Nuclear Ezel Div., 275 Winchester Ave., New Haven, Conn.
Omco, U. S. 93 & Los Palomas St., Kingman, Ariz.
Opplom Co., Inc., 83 Uhland St., East Rutherford, N. J.
Oregon Electronic Mfg. Co., 2105 S. E. 6th St., Portland, Ore.
Orlando Research, Inc., P. O. Box 6491, Orlando, Fla.
Ortho Filter Corp., 198 Albion Ave., Paterson 2, N. J.
Oster Mfg. Co., John, Avionic Div., 1 Main St., Racine, Wis.
Otis Gasket & Rubber Co., Andrew, 231–33 W. Court St., Cincinnati 2, Ohio

P

PCA Electronics, Inc., 16799 Schoenborn St., Sepulveda, Calif.
Pace Electrical Instruments Co., Inc., 70–31 84th St., Glendale 27, N. Y.
Pacific Coast Engineering Co., Oak & Clement Sts., Alameda, Calif.
Pacific Division, Bendix Aviation Corp., 11600 Sherman Way, North Hollywood, Calif.
Pacific Electric Motor Co., 1009 66th Ave., Oakland 21, Calif.
Pacific Electro-Nuclear Co., 11818 Teale St., Culver City, Calif.
Pacific Nuclear Co., 5439 Geary Blvd., San Francisco 21, Calif.
Pacific Pumps, Inc., 5715 Bickett St., Box 151, Huntington Park, Calif.
Pacific Semiconductors, Inc., 10451 W. Jefferson Blvd., Culver City, Calif.
Pacific Transducer Corp., 11836 SW Pico Blvd., Los Angeles 64, Calif.
Packard Instrument Co., Inc., P. O. Box 428, La Grange, Ill.
Packed Column Corp., 30 Church St., New York 7, N. Y.
Paisley Products, Inc., 630 W. 51st St., New York 19, N. Y.
Pall Filtration Co., 30 Sea Cliff Ave., Glen Cove, N. Y.
Panax Equipment, Ltd., 173 London Rd., Mitcham, Surrey, England
Pancro Mirrors, Inc., 2938 Los Feliz Blvd., Los Angeles 29, Calif.
Pandjiris Weldment Co., 5151 Northrup Ave., St. Louis 10, Mo.
Panellit, Inc., 7401 N. Hamlin Ave., Skokie, Ill.
Paragon Electric Co., Two Rivers, Wis.
Paraplegics Mfg. Co., Inc., 10068 Franklin Ave., Franklin Park, Ill.
Parisier & Co., Maurice I., 741–745 Washington St., New York 14, N. Y.
Par-Metal Products Corp., 32–62 49th St., Long Island City 3, N. Y.
Parr Instrument Co., Moline, Ill.
Parsons Co., Ralph M., Electronics Div., 151 S. De Lacey Ave., Pasadena, Calif.
Partlow Corp., The, Dept. NBG-58, New Hartford, N. Y.
Patterson Moos Div., Universal Winding Co., 90–28 Van Wyck Expressway, Jamaica 18, N. Y.
Peck & Harvey Mfg. Corp., 5643 N. Western Ave., Chicago 45, Ill.
Peerless Instrument Co., Inc., 90–15 Corona Ave., Elmhurst 73, N. Y.
Peerless Pump Div. of Food Machinery & Chemical Co., 301 West Ave., Los Angeles 31, Calif.
Pelton & Crane Co., 200 Clanton Rd., Charlotte, N. C.
Penfield Mfg. Co., Inc., 19 High School Ave., Meriden, Conn.
Penberthy Instrument Co., Hi-D Division, 4301 6th Ave., So., Seattle 8, Wash.
Penn Fibre & Specialty Co., 2020 E. Westmoreland St., Philadelphia 34, Pa.
Penn-Texas Corp., Nuclear Engineering Div., 730 Fifth Ave., New York 19, N. Y.
Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.
Pentron Corp., 777 S. Tripp, Chicago 24, Ill.
Perfection Mica Co., Magnetic Shield Div., 1322 N. Elston Ave., Chicago 22, Ill.
Perkin-Elmer Corp., Main Ave., Norwalk, Conn.
Perkin Engineering Corp., 345 Kansas St., El Segundo, Calif.
Permacel Tape Corp., New Brunswick, N. J.
Permag Corp., 216 Tenth Place, Brooklyn 5, N. Y.
Permutit Co., 50 W. 44th St., New York 36, N. Y.
Perschel Electronics, Inc., 13 Garden St., New Rochelle, N. Y.
Pfaudler Co., 1002 West Ave., Rochester, N. Y.
Pfizer & Co., Inc., Charles, Chemical Sales Div., 630 Flushing Ave., Brooklyn 6, N. Y.
Phaostron Instrument & Electronic Co., 151 Pasadena Ave., South Pasadena, Calif.
Phelps Dodge Copper Products Corp., 300 Park Ave., New York 22, N. Y.
Philadelphia Pump Div. of American Meter Co., 13500 Philmont Ave., Philadelphia 16, Pa.
Philadelphia Quartz Co., 1146X Public Ledger Bldg., Philadelphia 6, Pa.
Philbrick Researches, Inc., George A., 230 Congress St., Boston 10, Mass.
Philips Electronics Inc., 750 S. Fulton Ave., Mt. Vernon, N. Y.
Philips Gloeilampenfabrieken, N. V., Eindhoven, Holland
Phillips Control Corp., 59 W. Washington St., Joliet, Ill.
Phillips-Drucker, Route 1, P. O. Box 507, Astoria, Ore.
Phoenix Precision Instrument Co., 3803–05 N. 5th St., Philadelphia, Pa.
Photobell Co., 43 Vesey St., New York 7, N. Y.
Photocon Research Products, 421 N. Foothill Blvd., Pasadena 7, Calif.
Photovolt Corp., 95 Madison Ave., New York 16, N. Y.
Photron Instrument Co., 6516 Detroit Ave., Cleveland 2, Ohio
Physics Research Laboratories, P. O. Box 555, Hempstead, N. Y.
Picker X-Ray Corp., 25 South Broadway, White Plains, N. Y.
Pilot Chemicals Inc., 36 Pleasant St., Watertown 72, Mass.
Pioneer Central Division, Bendix Aviation Corp., Davenport, Iowa
Pioneer Rubber Co., Tiffin Rd., Willard, Ohio
Pioneer Service & Engineering Co., 231 S. LaSalle St., Chicago 4, Ill.
Pittsburgh Des Moines Steel Co., Pittsburgh 25, Pa.
Pittsburgh Lectrodryer Div. of McGraw-Edison Electric Co., 300 32nd St., Pittsburgh 30, Pa.
Pittsburgh Piping & Equipment Co., 116 49th St., Pittsburgh, Pa.
Pittsburgh Plate Glass Co., 1 Gateway Center, Pittsburgh 22, Pa.
Plastic Capacitors, Inc., 2620 N. Clybourn Ave., Chicago 14, Ill.
Polarad Electronics Corp., 43–20 34th St., Long Island City 1, N. Y.
Pollak Corp., Joseph, 81 Freeport St., Boston 22, Mass.
Polymer Corp., The, Reading, Pa.
Polymer Industries, Inc., Springdale, Conn.
Polyphase Instrument Co., East 4th St., Bridgeport, Penna.

Potter Aeronautical Corp., Route 22, Union, N. J.
Potter & Brumfield, Inc., Princeton, Ind.
Potter Instrument Co., Sunnyside Blvd., Plainview, N. Y.
Powell Co., Wm., The, Cincinnati 22, Ohio
Power Designs, Inc., 89-25 120th St., Richmond Hill 18, N. Y.
Power Equipment Co., 5740 E. Nevada St., Detroit 34, Mich.
Power Sources Inc., Burlington, Mass.
Powers Regulator Co., The, 3400 Oakton, Skokie, Ill.
Pratt Co., Henry, 2322 S. Halsted St., Chicago, Ill.
Precision Apparatus Co., Inc., 70-31 84th St., Glendale 27, N. Y.
Precision Chemical Pump Corp., 1396 Main St., Waltham, Mass.
Precision Inc., 730 Lyndale Ave., N., Minneapolis, Minn.
Precision Radiation Instruments, Inc., 4223 W. Jefferson Blvd., Los Angeles 16, Calif.
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.
Preco Chemical Corp., Allen Blvd., Farmingdale, N. Y.
Premier Metal Products Co., 337 Manida St., Bronx 59, N. Y.
Price Electric Corp., Frederick, Md.
Printfield Inc., 93 Mercer St., New York 12, N. Y.
Process & Instruments, 18 Stone Ave., Brooklyn 33, N. Y.
Production Instrument Div. of General Controls Co., 8060 McCormick Blvd., Skokie, Ill.
Protectoseal Co., 1920 S. Western Ave., Chicago 8, Ill.
Pullman Vacuum Cleaner Corp., 25 Buick St., Boston 15, Mass.
Pulse Engineering, 3657 Spring St., Redwood City, Calif.
Pure Oil Co., 35 E. Wacker, Chicago, Ill.
Purolator Products, Inc., 470 New Brunswick Ave., Rahway, N. J.
Pyramid Electric Co., 1445 Hudson Blvd., North Bergen, N. J.
Pyramid Screen Corp., 181 Harvard St., Brookline 46, Boston, Mass.
Pyrofilm Resistor Co., U. S. Highway 46, Parsippany, N. J.
Pyrometer Instrument Co., Inc., Bergenfield, N. J.

Q

Q.V.S., Inc., 20 N. 15th St., East Orange, N. J.
Quartz Products Corp., 688 Somerset St., Plainfield, N. J.
Quincy Compressor Co., Quincy, Ill.

R

R.&I.E. Equipment Div. of I-T-E Circuit Breaker Co., Greensburg, Pa.
R-P & C Valve Div., American Chain & Cable Co., Inc., Tulpehocken & Lebanon Valley Rd., Reading, Pa.
RS Electronics Corp., 435 Portage Ave., Palo Alto, Calif.
Radiation Applications Inc., 342 Madison Ave., New York 17, N. Y.
Radiation Counter Labs., Inc., 5122 W. Grove St., Skokie, Ill.
Radiation, Inc., P. O. Box 37, Melbourne, Fla.
Radiation Industries Co., Box 232, Brookhaven, N. Y.
Radiation Instrument Co., P. O. Box 733, Silver Spring, Md.
Radiation Instrument Development Lab., 5737 S. Halsted St., Chicago 21, Ill.
Radiation Research Corp., 140 E. 59th St., New York, N. Y.
Radio City Products Co., Inc., Centre & Glendale Sts., Easton, Pa.
Radio Corporation of America, Engineering Products Div., Camden, N. J.
Radio Corporation of America, Tube Div., 415 S. Fifth St., Harrison, N. J.
Radio Development & Research Corp., 100 Pennsylvania Ave., Paterson 3, N. J.
Radio Frequency Labs., Inc., Boston 2, N. J.
Radio Receptor Co., Inc., 240 Wythe Ave., Brooklyn 11, N. Y.
Radiological Research Institute Inc., 663 Lipan St., Denver, Colo.
Radium Chemical Co., 161 E. 42nd St., New York 17, N. Y.
Ram Chemicals, Inc., 200 E. Olive St., Gardena, Calif.
Ransom Research, P. O. Box 382, San Pedro, Calif.
Rapid Electric Co., 2881 Middletown Rd., New York, N. Y.
Rascher & Betzold, Inc., 730 N. Franklin St., Chicago 10, Ill.
Rauland-Borg Corp., 3515 W. Addison St., Chicago 18, Ill.
Rawson Electrical Instrument Co., 114 Potter St., Cambridge 42, Mass.
Ray-O-Vac Co., Madison, Wis.
Ray-Proof Corp., 843 Canal St., Stamford, Conn.
Raypar Inc., 7800 W. Addison St., Chicago 34, Ill.
Raytheon Mfg. Co., Ceramic Sales, Foundry Ave., Waltham, Mass.
Raytheon Mfg. Co., Commercial Equipment Div., 100 River St., Waltham, Mass.
Raytheon Mfg. Co., Microwave & Power Tube Operations, Foundry Ave., Waltham, Mass.
Raytheon Mfg. Co., Nuclear Power Group, 28 Seyon St., Waltham 54, Mass.
Raytheon Mfg. Co., Receiving & Cathode Ray Tube Operations, 55 Chapel St., Newton 58, Mass.
Reactive Metals, Inc., P. O. Box 370, Ashtabula, Ohio
Reactor Materials Dept., Davison Chemical Co., P. O. Box 218, Erwin, Tenn.
Red Bank Division, Bendix Aviation Corp., Eatontown, N. J.
Redmon Electronics Corp., P. O. Box 72, Thompsonville, Conn.
Redmond Co., Inc., Owosso, Mich.
Reed Co., Inc., C. W., 5959 S. Hoover St., Los Angeles 44, Calif.
Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.
Reichhold Chemicals, Inc., 525 N. Broadway, White Plains, N. Y.
Reilly Tar & Chemical Corp., 1615 Merchants Bank Bldg., 11 S. Meridan St., Indianapolis 4, Ind.
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Rem-Cru Titanium, Inc., Midland, Pa.
Remington Air Conditioning Div. of Remington Corp., Willey St., Auburn, N. Y.
Remington Rand Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y.
Remler Co., 2101 Bryant St., San Francisco 10, Calif.
Rempe Co., 334 N. Sacramento Blvd., Chicago 12, Ill.
Reon Resistor Corp., 117 Stanley Ave., Yonkers, N. Y.
Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, Ohio
Republic Steel Corp., 3100 E. 45th St., Cleveland 27, Ohio
Resdel Corp., P. O. Box 217, Rio Grande, N. J.
Research Chemicals, Inc., Box 431, Burbank, Calif.
Research Development Manufacture, 429 E. Collom St., Philadelphia 44, Pa.
Research Products Corp., 1015 E. Washington Ave., Madison, Wis.
Research Specialties, Co., 3005 Hopkins St., Berkeley 7, Calif.
Research Vacuum Supply Co., 6712 N. Clark St., Chicago, Ill.
Resistance Products Co., 914 S. 13th St., Harrisburg, Pa.
Resistoflex Corp., Roseland, N. J.
Resitron Laboratories, Inc., 2900 Nebraska Ave., Santa Monica, Calif.
Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.
Revere Corp. of America, Wallingford, Conn.
Rex Corp., The, Heyward Rd., West Acton, Mass.
Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.
Richards Co., Inc., Arklay S., 12 Winchester St., Newton Highlands 61, Mass.
Richardson Company, The, 2775 Lake St., Melrose Park, Ill.
Riehle Testing Machines Div., American Machine & Metals, Inc., East Moline, Ill.
Riley Stoker Corp., 9 Neponset St., Worcester 8, Mass.
Risdon Manufacturing Co., The, Naugatuck, Conn.
Roberts Toledo Rubber Co., 1200 Prospect & M.C.R.R., Toledo 6, Ohio
Robbins Aviation, 1735 W. Florence Ave., Los Angeles 47, Calif.
Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield, Ohio
Robertshaw-Fulton Controls Co., Instrument Div., 2920 N. 4th St., Philadelphia 33, Pa.
Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.
Robinson Clay Products Co., The, 65 W. State St., Akron 9, Ohio
Robinson Machine Works, Inc., 802 E. 8th St., New Albany, Ind.
Rohm & Haas Co., Washington Square, Philadelphia 5, Pa.
Ross Heat Exchanger Div. of American-Standard, Box 2081, Buffalo 5, N. Y.
Rotron Mfg. Co., 7 Schoonmaker Lane, Woodstock, N. Y.
Roy Co., Milton, 1300 E. Mermaid Lane, Philadelphia 18, Pa.
Royal McBee Corp., Port Chester, N. Y.
Rubber & Asbestos Corp., 225 Belleville Ave., Bloomfield, N. J.
Ruggles-Klingemann Mfg. Co., Salem, Mass.
Ruge Associates, Inc., Arthur C., 733 Concord Ave., Cambridge 38, Mass.
Rutherford Electronics Corp., 8944 Lindblade, Culver City, Calif.
Ryerson & Son, Inc., Joseph T., P. O. Box 8000-A, Chicago, Ill.

S

S. M. Industrial Div. of Medina Mfg. Co., Racine, Wis.
St. Eloi Chemical Corp., P. O. Box 307, Cincinnati 44, Ohio
St. John X-Ray Laboratory, Califon, N. J.
Samples Machine Co., A. M., 208 Tazewell Place, Knoxville 18, Tenn.
Sanborn Co., Industrial Div., 175 Wyman St., Waltham 54, Mass.
Sanders Associates, Inc., 95 Canal St., Nashua, N. H.
Sanford Miller Co., 691 Bedford Ave., Brooklyn 6, N. Y.
Sangamo Electric Co., Electronics Div., Springfield, Ill.
Sarco Co., Inc., 350 Fifth Ave., New York 1, N. Y.
Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill.
Sarkes Tarzian, Inc., 415 N. College Ave., Bloomington, Ind.
Sauereisen Cements Co., Sauereisen Bldg., Pittsburgh 15, Pa.
Saxenburg Ceramics, Saxenburg, Pa.
Scam Instrument Corp., 1811 W. Irving Park Rd., Chicago, Ill.
Schaevitz Engineering, P. O. Box 505, Camden 1, N. J.
Schleicher & Schuell Co., Carl, Keene, N. H.
Schutte & Koerting Co., Cornwell Heights, Bucks County, Pa.
Schwarz Laboratories Inc., 230 Washington St., Mt. Vernon, N. Y.
Scientific Electric Corp., 105-119 Monroe St., Garfield, N. J.
Scientific Engineering Laboratory, 2229 McGee Ave., Berkeley, Calif.
Scientific Equipment Co., 23 N. Hawthorne Lane, Indianapolis 19, Ind.
Scientific Instruments Div. of Beckman Instruments, Inc., Fullerton, Calif.
Scintilla Division, Bendix Aviation Corp., Sidney, N. Y.
Scott, Inc., H. H., 111 Powdermill Road, Maynard, Mass.
Scovill Mfg. Co., Mills Div., 99 Mill St., Waterbury 20, Conn.
Scully Signal Co., Melrose, Mass.
Sealol Corp., Warwick Industrial Park, Providence 5, R. I.
Sealtron Corp., Reading Rd. at Amity, Cincinnati 15, Ohio
Sel-Rex Corp., 75 River Rd., Nutley 10, N. J.
Serdex, Inc., 12 Bowdoin Square, Boston 14, Mass.
Serva Corp. of America, 2020 Jericho Turnpike, New Hyde Park, N. Y.
Servomechanisms, Inc., 12500 Aviation Blvd., Hawthorne, Calif.
Servo-Tek Products Co., 1086 Goffle Rd., Hawthorne, N. J.
Sethco Mfg. Co., 2284 Babylon Turnpike, Merrick, N. Y.
Shaircross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.
Shamban & Co., W. S., 11617 W. Jefferson Blvd., Culver City, Calif.
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Shell Oil Co., Lubricants Div., 50 W. 50th St., New York, N. Y.
Sharer-Gillett Co., Marshall, Mich.
Shieldalloy Corp., Newfield, N. J.
Shriver & Co., Inc., T., 864 Hamilton St., Harrison, N. J.
Shurite Meters, 35 Hamilton St., New Haven 8, Conn.
Sicklas Div., F. W., General Instrument Corp., 165 Front St., Chicopee, Mass.
Sierra Electronic Corp., 3885 Bohannon Drive, Menlo Park, Calif.
Sigma Instruments, Inc., 180 Pearl St., South Braintree, Boston 85, Mass.
Sigmamotor, Inc., 500 N. Main St., Middleport, N. Y.
Siliconex Division, Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Simmonds Aerocessories Inc., 105 White Plains Rd., Tarrytown, N. Y.
Simplex Valve & Meter Co., 7 E. Orange St., Lancaster, Pa.
Simpson Electric Co., Div. of American Gage & Machine Co., 5208 W. Kinzie St., Chicago 44, Ill.
Single Crystal Corp. of America, RD1, Saxenburg Blvd., Saxenburg, Pa.
Sintercast Corp. of America, 134 Woodworth Ave., Yonkers, N. Y.
Skinner Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.
Small Motors, Inc., 2076 Elston Ave., Chicago 14, Ill.
Smith Co., S. Morgan, York, Pa.
Smith Corp., A. O., 3533 N. 27th St., Milwaukee 1, Wis.
Smith Tube Corp., 45 N. Broad St., Ridgewood, N. J.
Societe Anonyme de Machines Electrostatiques, B. P. 150, Grenoble, France
Societe D'Applications Industrielles de la Physique (S.A.I.P.), 146, Bd. de Charonne, Paris, France
Sola Electric Co., 4633 W. 16th St., Chicago 50, Ill.
Solar Aircraft Co., 2200 Pacific Highway, San Diego 12, Calif.
Solus-Schall, Ltd., 15/18 Clipstone St., Gt. Portland St., London, W. 1, England
Sonneborn Sons, Inc., L., 404 Fourth Ave., New York 16, N. Y.
Sorensen & Co., Inc., Richards Ave., South Norwalk, Conn.
Sorvall, Inc., Ivan, P. O. Box 230, Pearl St., Norwalk, Conn.
Sound Apparatus Co., Stirling, N. J.
Southwestern Industrial Electronics Co., 2831 Post Oak Rd., P. O. Box 13058, Houston 19, Texas
Sparkler Mfg. Co., Mundelein, Ill.
Sparta Mfg. Co., Div. of U. S. Ceramic Tile Co., Dover, Ohio

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Special Screw Products Co., Bedford, Ohio
Speedline Stainless Steel Fittings Div. of Horace T. Potts Co., Erie Ave. & D St., Philadelphia 34, Pa.
Speer Carbon Co., St. Marys, Pa.
Spellman Television Co., Inc., 3029 Webster Ave., Bronx 67, N. Y.
Spencer-Kennedy Labs., Inc., 1320 Soldiers Field Rd., Boston 35, Mass.
Sperry & Co., D. R., Batavia, Ill.
Sperry Gyroscope Div. of Sperry-Rand Corp., Great Neck, N. Y.
Sperry Products, Inc., Danbury, Conn.
Spinco Div. of Beckman Instruments, Inc., 1117 California Ave., Palo Alto, Calif.
Sprague Electric Co., North Adams, Mass.
Squires Co., C. E., 18805 Syracuse Ave., Cleveland 10, Ohio
Stackpole Carbon Co., St. Marys, Pa.
Stanat Mfg. Co., Inc., 571 Shames Drive, Westbury, N. Y.
Standard Electric Time Co., 89 Logan St., Springfield 2, Mass.
Standard Electronics Div. of Radio Engineering Labs., Inc., 29-01 Borden Ave., Long Island City 1, N. Y.
Standard Pressed Steel Co., Box 1033, Jenkintown, Pa.
Standard Railway Equipment Mfg. Co., 310 S. Michigan Ave., Chicago 4, Ill.
Standard Safety Equipment Co., 232 W. Ontario St., Chicago, Ill.
Standard Scientific Supply Corp., 808 Broadway, New York, N. Y.
Stanton Instruments, Ltd., 119 Oxford St., London, W. 1, England
Staplex Co., The, Air Sampler Div., 775 Fifth Ave., Brooklyn 32, N. Y.
Statham Laboratories, Inc., 12401 W. Olympic Blvd., Los Angeles 64, Calif.
Steel & Alloy Tank Co., 1 Bessemer St., Newark 1, N. J.
Steiner-Ives Co., Springfield Rd., Union, N. J.
Stephan & Co., Ltd., R. A., 120-126 Lavender Ave., Mitcham, Surrey, England
Stephens Tru-Sonic Inc., 8538 Warner Drive, Culver City, Calif.
Sterling Mfg. Co., 7201 Wentworth Ave., Cleveland 2, Ohio
Sterling Transformer Corp., 297 N. Seventh St., Brooklyn 11, N. Y.
Stevens Mfg. Co., Inc., P. O. Annex 1007, Mansfield, Ohio
Steward Mfg. Co., D. M., E. 36th St., Chattanooga 1, Tenn.
Stewart Corp., F. W., 4311-13 Ravenswood Ave., Chicago 13, Ill.
Stewart Engineering Co., P. O. Box 277, Soquel, Calif.
Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.
Stillman Rubber Co., 5811 Martyn Ave., Culver City, Calif.
Stoelting Co., C. H., 424 N. Homan Ave., Chicago 24, Ill.
Stokes Corp., F. J., 5500 Tabor Rd., Philadelphia 20, Pa.
Stow Mfg. Co., 355 Shear St., Binghamton, N. Y.
Strand Products Corp., P. O. Box 447, Gadsden, Ala.
Streeter-Amet Co., 4101 Ravenswood Ave., Chicago 13, Ill.
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Struthers-Wells Corp., Warren, Pa.
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Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio
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Thermal Refractories Corp., 4501 Dell Ave., North Bergen, N. J.
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Thompson Products, Inc., 2196 Clarkwood Ave., Cleveland 3, Ohio
Thor Ceramics, Inc., 225 Belleville Ave., Bloomfield, N. J.
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Torsion Balance Co., 35 Manhegan St., Clifton, N. J.
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Townson & Mercer, Ltd., Croydon, Surrey, England
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Trad Electronics Corp., 1000 First Ave., Asbury Park, N. J.
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Transformers, Inc., 200 Stage Rd., Vestal, N. Y.
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Ultrodyne Engineering Labs., Inc., P. O. Box 3308, Albuquerque, N. M.
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United Aircraft Products, Inc., 1116 Balander, Dayton, Ohio
United Carbon Products Co., Inc., P. O. Box 269, Bay City, Mich.
United Mfg. Co., Div. of W. L. Maxson Corp., 41 Haig St., Hamden 14, Conn.
United Materials & Richmond Brick Co., Ltd., Pt. Richmond, Calif.
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United Shoe Machinery Corp., Atomic Power Dept., Research Div., Balch St., Beverly, Mass.
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U. S. Industrial Chemicals Co., Div. of National Distillers & Chemical Corp., 99 Park Ave., New York 16, N. Y.
U. S. Pipe & Foundry Co., Burlington, N. J.
U. S. Radium Corp., Morristown, N. J.
U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.
United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.
U. S. Stoneware Co., Akron 9, Ohio
United Transformer Corp., 150 Varick St., New York 13, N. Y.
Universal Atomics, A Div. of Universal Transistor Products Corp., 143 E. 49th St., New York 17, N. Y.
Universal Electronics Co., 1720 22nd St., Santa Monica, Calif.
Universal Industrial Equipment Co., 1625 Paterson Plank Rd., Secaucus, N. J.
Universal X-Ray Corp., 1140 N. Western Ave., Chicago 22, Ill.
Uranium Ore & Supply Co., 546 W. Lake St., Chicago 6, Ill.
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Vacuum Metals Corp., Div. of Crucible Steel Co. of America, P. O. Box 977, Syracuse 1, N. Y.
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Vanadium Corp. of America, Graybar Bldg., 420 Lexington Ave., New York 17, N. Y.
Vanton Pump & Equipment Corp., 201 Sweetland Ave., Hillside, N. J.
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Vamiton Co., 416 N. Varney St., Burbank, Calif.
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Vactron, Inc., 1620 Trapelo Rd., Waltham 54, Mass.
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Ver-Lac-Oid Chemical Co., 116 Broad St., New York 4, N. Y.
Vickers Electric Division, Vickers, Inc., 1840 Locust St., St. Louis 3, Mo.
Vickers Inc., Div. of Sperry-Rand Corp., Marine & Ordnance Dept., Waterbury 20, Conn.
Victor Adding Machine Co., 3900 N. Rockwell St., Chicago 18, Ill.
Victor Chemical Works, 155 N. Wacker Drive, Chicago, Ill.
Victoreen Instrument Co., 5806 Hough Ave., Cleveland 3, Ohio
Victory Engineering Corp., 77 Springfield Rd., Union, N. J.
Videon Electronic Corp., 902 E. Michigan St., Indianapolis 2, Ind.
Vlanor & Sons, Hyman, 5300 Hatcher St., Dept. NBG, Richmond 5, Va.
Viking Pump Co., Fourth & State St., Cedar Falls, Iowa
Volk Radio Chemical Co., 5412 N. Clark St., Chicago 40, Ill.
Vorac Co., 147 Meadow Rd., Rutherford, N. J.
Vulcan Electric Co., 88 Holton St., Danvers, Mass.

W

Wah Chang Corp., 233 Broadway, New York 7, N. Y.
Wakefield Industries, Inc., 5107 W. Grove St., Skokie, Ill.
Walkirt Co., The, 141 W. Hazel St., Inglewood 3, Calif.
Wallace & Tiernan Inc., 25 Main St., Belleville 9, N. J.
Wallingford Steel Co., 80 Valley St., Wallingford, Conn.
Waltham Electronics Corp., 751 Main St., Waltham, Mass.
Walworth Co., 60 E. 42nd St., New York 17, N. Y.
Wang Laboratories, Inc., 37 Hurley St., Cambridge 41, Mass.
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Washington Steel Corp., 60 S. Woodland Ave., Washington, Pa.
Waterbury Farrel Foundry & Machine Co., 453 Bank St., Waterbury 20, Conn.
Waterman Engineering Co., 725 Custer Ave., Evanston, Ill.
Waterman Products Co., Inc., 2445–63 Emerald St., Philadelphia 25, Pa.
Waters Manufacturing, Inc., Boston Post Rd., Wayland, Mass.
Watlow Electric Mfg. Co., 1376 Ferguson Ave., St. Louis 14, Mo.
Watson Mfg. Co., Inc., Jamestown, N. Y.
Watts Regulator Co., 10 Embankment St., Lawrence, Mass.
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Waveforms, Inc., 333 Sixth Ave., New York 14, N. Y.
Weatherhead Co., The, 128 W. Washington Blvd., Fort Wayne, Ind.
Webber Corp., 24 S. Keystone Ave., Indianapolis, Ind.
Weizmen Institute of Science, Rehovot, Israel
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Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.
Welding Fittings Corp., New Castle, Pa.
Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich.
Westberg Mfg. Co., 144 S. Coombs St., Napa, Calif.
West Coast Electronics Co., A Sub. of Litton Industries, 9261 W. 3rd St., Beverly Hills, Calif.
West Instrument Corp., 4363 W. Montrose Ave., Chicago 41, Ill.
Western Gear Corp., General Offices, P. O. Box 182, Lynwood, Calif.
Western Gold & Platinum Co., 525 Harbor Blvd., Belmont, Calif.
Western Radiation Lab., 1107 W. 24th St., Los Angeles 7, Calif.
Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.
Westinghouse Electric Corp., Atomic Equipment Dept., Cheswick, Pa.
Westinghouse Electric Corp., Electronic Tube Div., Box 284, Elmira, N. Y.
Westinghouse Electric Corp., X-Ray Div., 2519 Wilkens Ave., Baltimore 3, Md.
Westlake Plastics Co., West Lenni Rd., Lenni Mills, Pa.
Weston Electrical Instrument Corp., A Sub. of Daystrom, Inc., 614 Frelinghuysen Ave., Newark 12, N. J.
Westronics, Inc., 3605 McCart, Fort Worth, Texas
Wheaton Co., Y. C., Millville, N. J.
Wheelco Instruments Div., Barber-Colman Co., Rockford, Ill.
Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 91, Conn.
Wheeler Mfg. Co., C. H., 19th & Lehigh, Philadelphia 32, Pa.
Wheelock Signals, Inc., 273 Branchport Ave., Long Branch, N. J.
White Dental Mfg. Co., S. S., 10 E. 40th St., New York 16, N. Y.
Whitehead & Hoag Co., The, 272 Sussex Ave., Newark 1, N. J.
Whittington Pump & Engineering Corp., 1126 Prospect St., Indianapolis 3, Ind.
Wiegand Co., Edwin L., 7895 Thomas Blvd., Pittsburgh 8, Pa.
Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.
Will Corp., Box 1050, Rochester 3, N. Y.
Wilson & Co., O. C., 1915 Eighth Ave., Huntington, W. Va.
Winchester Electronics, Inc., Willard Road, Norwalk, Conn.
Winslow Co., Inc., 9 Liberty St., Newark 2, N. J.
Wirt Co., 5221 Greene St., Philadelphia 44, Pa.
Witt Cornice Co., The, 2118–24 Winchell Ave., Cincinnati 14, Ohio
Wood & Co., Charles S., 88 Main St., West Orange, N. J.
Wood Counter Laboratory, H., 1525 E. 53rd St., Chicago 15, Ill.
Worcester Valve Co., Inc., 16 Parker St., Worchester, Mass.
Workon, Inc., 253 W. 28th St., New York 1, N. Y.
Wornor Electronic Devices, Rankin, Ill.
Worthington Corp., Harrison, N. J.

X

X-Ray Dept. of General Electric Co., 4855 Electric Ave., Milwaukee, Wis.

Y

Yardney Electric Corp., 40 Leonard St., New York 13, N. Y.
Yellow Springs Instrument Co., Inc., P. O. Box 106, Yellow Springs, Ohio
Yerzley & Co., 744 Broad St., Newark 2, N. J.
Yonkers Laboratory Supply Co., 70 Palisade Ave., Yonkers 2, N. Y.
York Co., Otto H., 6 Central Ave., West Orange, N. J.
York Corp., York, Pa.
Yuba Consolidated Industries, Inc., 351 California St., San Francisco 4, Calif.

Z

Zalloo Brothers, 800 Locust St., Wilmington, Del.
Zenith Optical Lab., 1940 Great Neck Rd., Copiague, N. Y.
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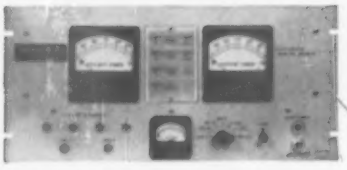

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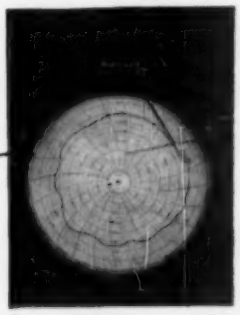

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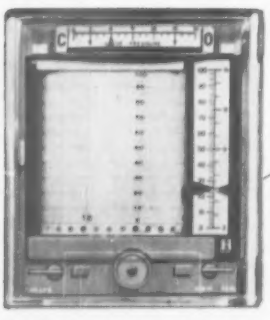

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